



A Conceptual Requirements Model for the Domain of Electronic Service Delivery: Success Factors in E-Government Implementation

Mehdi Sagheb-Tehrani¹, Arbi Ghazarian²

¹ College of Business, Columbus State University 4225 University Ave, Columbus, GA, 31907, USA, mtehrani@bemidjstate.edu.

² Ira A Fulton Schools of Engineering, School of Computing, Informatics, and Decision Systems Engineering, Arizona State University, 7171 E. Sonoran Arroyo Mall, Peralta Hall, Mesa, AZ 85212, USA, Arbi.Ghazarian@asu.edu.

Abstract.

Governments and citizens benefit from successful implementations of electronic government (e-government) services. E-government utilizes Information Technologies (IT) to provide access to a wide range of public services and to stimulate economic development. Today governments at all levels respond to millions of citizens' demands electronically and increasingly move more of their services towards an electronic delivery model. To address the need for successful e-government implementations, in this paper, we identify several key success factors that are appropriate for e-government design and implementation. We surveyed about one hundred e-government web sites on those key success factors, generated hypothesis, developed a conceptual model focusing on steps towards implementing more successful e-government projects, and evaluated the resulting conceptual model using a series of statistical tests.

Keywords: E-government; Information Technology (IT); Government to Business (G2B); Government to Citizens (G2C); Government to Government (G2G); Conceptual Requirements Model.

1. Introduction

1.1 Background

In recent years many countries have integrated information technology (IT) into their national economic development strategies. Governments see IT as a way to improve the quality of life of their citizens. The scale of activity on the part of public sectors in leveraging IT has increased in volume (Smith, 2008). E-government is enabling governmental organizations to provide better services to their customers. The ability to improve citizens' access to services online has made e-government a desirable application for government organizations (Gorla, 2008; Donna, Yen, 2006). Governments around the world are implementing e-government. In every part of the world - from industrialized countries to developing ones, governments are putting information online to provide better services for citizens (The Working Group, 2002; Chircu, Lee, 2005; Palmer, 2006). Transactions such as renewing driver's licenses, applying for jobs, and filing tax forms can now be conducted online, quickly and efficiently

(West,2008-2). To be able do these services, e-government uses information technology (IT).

Some developing countries are lagging behind in providing e-government services to their citizens. This can be due to several reasons, including the lack of a good communication infrastructure, low computer literacy, and limited access to the Internet (Akther, M.S., Onishi, T. and Kidokoro, T, 2007). These issues have to be addressed before e-government applications can be implemented. Officials should be aware of the obstacles before embarking on e-government projects as these projects can be costly and take a long time to complete [The working group, 2002].

The United Nations E-Government Survey 2012 (UN, 2012) finds that many countries have put in place e-government applications for their citizens to further enhance public sector efficiencies and streamline governance systems to support sustainable development. In the present recessionary time, some countries have been better able to continue to invest in IT infrastructure and service improvement for their citizens. Table 1 below shows the world e-government ranking.

Table 1. World e-government development leaders (source: UN, 2012)

1- Republic of Korea	2- Netherlands	3- United Kingdom	4- Denmark	5- United States
6- France	7- Sweden	8- Norway	9- Finland	10- Singapore
11- Canada	12- Australia	13- New Zealand	14- Liechtenstein	15- Switzerland
16- Israel	17-Germany	18-Japan	19-Luxembourg	20-Estonia

1.2 Organization of the paper

The next section describes the research methodology used for this study. Section 2 attempts to clarify some of the concepts related to the e-government. Section 3 describes data analysis and statistical testing of the hypotheses. Section 4 puts forward a conceptual model of e-government.

1.3 Research Methodology, Questions, and Limitations

Many public organizations are implementing e-government projects. As a consequence, there is a need to put forward a conceptual requirements model focusing on steps towards successful planning and implementation of e-government projects. Similar to any other type of complex software project, the successful implementation of e-government systems demands a correct and thorough requirements specification (Tehrani & Ghazarian 2002, Ghazarian & Chughtai 2012) as the success of all the subsequent software engineering life cycle activities, including architecture, design, implementation, testing, and maintenance, to a large extent, depends on the quality of the produced specification of requirements for the to-be-developed system. A fruitful avenue to planning and implementation of e-government systems is capture knowledge of the requirements space for the domain of e-government systems and then use this knowledge to guide the planning and implementation processes. Domain Knowledge, which is the basis for domain-specific engineering of software systems, can be represented in various forms including, taxonomic schemes (see Ghazarian 2012, Ghazarian et al. 2011), domain ontologies, conceptual domain models, and domains theories (Ghazarian & Chughtai 2012). The work presented here attempts to develop and evaluate a conceptual domain model for the delivery of electronic services in e-government systems. Domain models allow for a more systematic and prescriptive approach to systems development (Ghazarian 2011).

This study attempts to explain the concept of e-government by defining various important perceptions and their relationships involved in embracing e-government. The research described here draws upon social system theory in the functionalist sociology defined by Burrell and Morgan (1979). The focus of social system theory is on the “holistic view”, i.e., all parts of a system are related to each other. This paper approaches its subject matter from an objectivist perspective. Objectivism is one of several doctrines holding that all reality is objective and external to the mind and that knowledge is reliably based on observed objects and events. Put differently, objectivism holds

that reality exists independent of consciousness; that individual persons are in contact with this reality through sensory insight; that human beings can gain objective knowledge from perception through the process of concept creation and deductive as well as inductive logic. The conceptual model, which will be presented in this paper, is based on the “holistic view” school (Social System Theory). The research methodology is based upon the literature review and personal experiences as IT consultants in numerous organizations. This study attempts to answer the following main research questions:

- What concepts are involved in implementing e-government in order to provide electronic services (e-services) for citizens?
- What are the steps towards implementing e-government?

Similar to most previous research, we will use internet to examine government web sites. The use of the internet has been suggested by e-government scholars as a method to assess e-government development (Mofleh, Wanous, 2009). A questionnaire was designed based upon the E-government model (see Figure-3). The survey was approved by the institutional review board at the institutions. The questionnaire was comprised of thirteen questions (See Appendix B). Some of the questions were designed as open-ended questions. The questionnaires were pre-tested before distribution. The questionnaire was made available online to 262 students taking nine different university¹ courses (see Table-1.1). The answers they provided were confidential and did not affect their course outcome or grade in any way. Participants were not required to identify themselves; respondent name on the questionnaire was optional. In total 61 questionnaires out of 262 questionnaires (23%) were returned. After collecting the questionnaires, we analyzed each question from each respondent and summarized the results in a series of tables.

Table 2. Basic information about the surveyed population and response rates

No	Course Title	Term	No. of Students	Under Graduate	Returned Questionnaire
1	BUAD 2280	Spring 2010	25	Yes	2
2	BUAD 2280	Fall 2010	27	Yes	7
3	BUAD 3283	Fall 2010	9	Yes	6
4	BUAD 3284	Fall2010	29	Yes	14
5	BUAD 3281	Fall 2010	18	Yes	4
6	BUAD 2280	Spring 2011	60	Yes	12
7	BUAD 3382	Spring 2011	12	Yes	4
8	BUAD 2280	Fall 2011	59	Yes	4
9	BUAD 4387	Fall 2011	23	Yes	8
Total	9 Courses		262		61

The number of participants (61 responses) and Web sites (100 websites) could be a limitation of our study. Furthermore, the questions in this study are based upon the authors’ understanding of the literature review.

2 Concepts Development

¹ For the purpose of confidentiality, the name of the university is not disclosed.

2.1 E-government

One frequently asked question regarding e-government is “What is e-government?” E-Government is more than just providing some public information and citizen services made available to the public via a Web site (Lee, Wu, Lin, and Wang, 2008; Curtin et al., 2003). E-government serves as a portal focused mainly on access to the public sector; these portals are aimed at citizens (G2C), businesses (G2B), other governments (G2G) and everyone else who are interested in the government and its services. Over 160 countries worldwide have already begun some kind of e-government project, creating a major market for IT vendors and service providers that are competent in helping public agencies in their technology initiatives (Greiner, 2005). E-government is an emerging concept and recent research has focused on applying concepts from e-commerce and management into e-government, including knowledge management and enterprise resource planning (Raymond and Bergeron, 2006). Governments are facing increased service expectations by their citizens and e-government is considered as one of the tools that can be used to meet the many challenges faced by governments (Jupp, 2003). Some of the services that can be offered by e-governments are as follows (Evolution of e-government, 2002):

Government to Citizens (G2C)

1. Income taxes: notification of assessment
2. Job search services by labor offices
3. Social security contributions
4. Personal documents (passport and driver's license)
5. Car registration (new, used and imported cars)
6. Application for building permission
7. Declaration to the police
8. Public libraries (availability of catalogues, search tools)
9. Certificates (birth, marriage): request and delivery
10. Enrollment in higher education / university
11. Announcement of moving (change of address)
12. Health related services (e.g., interactive advice on the availability of services in different hospitals; appointments for hospitals)

Government to Business (G2B)

1. Social contribution for employees
2. Corporation tax: declaration, notification
3. Value Added Tax (VAT): declaration, notification
4. Registration of a new company
5. Submission of data to statistical offices
6. Customs declarations

A study made by Gemini et al (Cap Gemini, Ernst and Young, 2001) shows that in Europe the most used services are the job search, income taxes, VAT, and corporate tax services; the least used are the health related services, building, and environment-related permits. Further, the study emphasizes that in Europe the biggest customer of e-government services is business (G2B, 53%) whereas services for citizen (G2C, 40%) scores significantly lower. FirstGov or USA.gov (see appendix A for URL) is the US federal government's portal, providing access to both state and federal government agency web sites. US portal now offers Americans a complete source of information, and the options to apply for student loans and even Social Security benefits online. FirstGov has about 186 million pages across 22 different sites and receive 6 million visitors per month (Greiner, 2005). The US e-government initiative is divided in three main groups as follows (Murra, 2003):

Government to Citizens (G2C):

1. Free online tax filing;
2. Job search;
3. Social security;
4. Personal documents (birth and marriage certificates, passport applications, driver license);

5. Immigration services;
6. Health and related services;
7. Government benefits;
8. Student loans;
9. Disaster help;
10. Other useful information (for sales, weather forecast, recreation).

Government to Business (G2B):

1. Comment on federal regulation;
2. Corporation tax;
3. Business opportunities;
4. Registration of a new company;
5. Business laws and regulations;
6. Central contractor registration;
7. Government auctions and sales;
8. Employer ID number;
9. Wage reporting;
10. Subcontracting opportunities;
11. Patents and trademarks filing;
12. Export portal.

Government to Government G2G:

1. 2003 Federal Pay Tables;
2. Grants;
3. Background Investigation Application;
4. E-Training Initiative for Federal Workers;
5. For Sale to Government Buyers;
6. FirstGov Search for Federal Agencies;
7. Per Diem Rates;
8. Employee Directory;
9. Federal Personnel-Payroll Changes.

Table 3. Data comparing e-government web sites from different countries based upon key concepts

Country	G2C	G2B	G2G	Visio n	Publicatio n	Interactio n	Transparenc y	Accessibilit y	Transactio n
Albania	A	A	NA	A	A	A	A	NA	A
Algeria	A	A	NA	A	A	A	A	NA	NA
Andorra	A	NA	NA	A	A	A	A	NA	A
Angola	A	A	NA	A	A	A	A	NA	A
Argentina	A	A	A	A	A	A	A	A	NA
Australia	A	A	NA	A	A	A	A	A	A
Austria	A	A	A	A	A	A	A	A	NA
Bahamas	A	A	NA	A	A	A	A	A	A

Barbados	A	NA	NA	A	A	A	A	NA	A
Belarus	A	A	NA	A	A	A	A	A	A
Belgium	A	NA	NA	A	A	A	A	NA	NA
Canada	A	A	NA	A	A	A	A	A	A
China	A	NA	NA	A	A	A	A	NA	NA
Columbia	A	NA	NA	A	A	A	A	NA	NA
Congo	A	NA	NA	A	A	A	A	NA	NA
Cuba	A	NA	NA	NA	NA	A	NA	NA	NA
Czech Republic	A	NA	NA	NA	A	A	A	NA	NA
Denmark	A	A	NA	A	A	A	A	NA	NA
Dominican Republic	A	NA	NA	A	A	A	NA	NA	NA
Egypt	A	A	NA	A	A	A	A	A	A
El Salvador	A	NA	NA	A	A	A	NA	NA	NA
Estonia	A	NA	NA	A	A	A	A	A	A
Fiji	A	A	NA	A	A	A	A	A	A
Finland	A	NA	NA	A	A	A	NA	NA	NA
Gambia	A	A	NA	A	A	A	A	NA	A
Georgia	A	A	NA	A	A	A	A	A	A
Germany	A	A	NA	A	A	A	A	NA	NA
Greece	A	A	NA	A	A	A	A	A	A
Guatemala	A	A	NA	A	A	A	A	NA	NA
Guinea	A	NA	NA	NA	A	A	A	NA	NA
Haiti	A	A	NA	A	A	A	A	A	A
Honduras	NA	A	NA	A	A	A	A	NA	A
Hungary	A	A	NA	A	A	A	A	A	A
Iceland	A	A	NA	A	A	A	A	A	A
India	A	A	NA	A	A	A	A	A	NA
Indonesia	A	A	A	A	A	A	A	A	A

Ireland	A	A	NA	A	A	A	A	A	A
Israel	A	A	NA	A	A	A	A	NA	A
Italy	A	A	A	A	A	A	A	A	A
Jamaica	A	NA	NA	A	A	A	A	A	NA
Jordan	A	A	NA	A	A	A	A	NA	NA
Kazakhstan	A	A	NA	A	A	A	A	A	A
Kenya	A	A	NA	A	A	A	A	A	NA
Kuwait	A	A	NA	A	A	A	A	A	A
Latvia	A	A	NA	A	A	A	A	NA	NA
Lebanon	A	A	NA	A	A	A	A	A	A
Liberia	A	A	NA	A	A	A	A	A	A
Lithuania	A	A	NA	A	A	A	A	A	A
Luxembourg	A	A	NA	A	A	A	A	NA	A
Madagascar	A	A	NA	NA	A	A	A	A	NA
Malawi	A	NA	A	A	A	A	A	A	A
Mali	A	A	NA	A	A	A	A	NA	NA
Marshall Islands	A	NA	NA	A	A	NA	A	NA	A
Mauritania	A	A	NA	NA	A	A	A	NA	A
Mauritius	A	A	A	NA	A	A	A	A	A
Mexico	A	A	NA	NA	A	A	A	A	A
Micronesia	A	A	A	A	A	NA	A	A	NA
Nepal	A	NA	A	A	A	A	A	NA	NA
New Zealand	A	A	A	NA	A	A	A	A	A
Nicaragua	A	A	A	A	A	A	A	A	NA
Niger	A	A	NA	A	A	A	A	A	A
Norway	A	A	A	NA	A	A	A	A	A
Oman	A	A	A	NA	A	NA	A	A	NA
Pakistan	A	NA	A	NA	A	A	A	NA	NA

Palau	A	A	NA	NA	A	A	A	A	NA
Panama	A	NA	NA	NA	A	A	A	NA	NA
Poland	A	A	NA	NA	A	A	A	NA	A
Qatar	A	NA	NA	NA	A	NA	A	A	NA
Republic of Korea	A	A	NA	A	A	A	A	NA	A
Republic of Moldova	A	NA	NA	A	A	A	A	NA	A
Romania	A	NA	NA	NA	A	A	A	NA	NA
Russian Federation	A	A	NA	NA	A	NA	A	A	NA
Rwanda	A	NA	NA	NA	A	NA	NA	NA	NA
Samoa	A	A	NA	A	A	A	A	A	NA
Saudi Arabia	A	A	A	A	A	A	A	A	A
Senegal	A	A	NA	A	A	A	A	A	NA
Serbia	A	A	A	A	A	A	A	A	NA
Singapore	A	A	A	A	A	A	A	A	A
Slovakia	NA	NA	A	A	NA	A	A	A	NA
Slovenia	NA	NA	A	A	A	NA	A	A	NA
Somalia	NA	NA	NA	NA	NA	NA	NA	NA	NA
South Africa	A	A	A	A	A	A	A	A	NA
Spain	A	A	A	A	A	A	A	A	NA
Sudan	A	A	A	NA	A	A	A	A	NA
Swaziland	A	A	A	A	A	A	A	A	NA
Sweden	A	A	A	A	A	A	A	A	A
Switzerland	A	A	A	A	A	A	A	A	A
Tong	A	A	A	NA	A	A	A	NA	NA
Togo	A	A	A	A	A	A	A	A	NA
Trinidad and Tobago	A	A	A	A	A	NA	A	A	NA
Tunisia	A	A	A	A	A	A	A	A	NA

Turkmenistan	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uganda	A	A	A	A	A	A	A	A	NA
Ukraine	A	A	A	A	A	A	A	A	A
United Republic of Tanzania	NA	NA	NA	A	A	A	A	A	NA
Uzbekistan	NA	A	NA	A	A	NA	A	A	NA
Zambia	NA	NA	NA	A	NA	A	NA	A	NA
Zimbabwe	A	A	A	NA	A	A	NA	A	A

A = Available

NA = Not available

According to one study by (West, 2008-1), 11% of the web sites examined have no services, 12% provide one service, 10% have two services, and 67% have three or more services. The United States is behind a number of countries in Internet access and broadband usage. America is behind Sweden, Denmark, Switzerland, Australia, Germany and the Netherlands in Internet subscribers per 100 inhabitants. Whereas 36 percent of Swiss residents have access to Internet subscription services, 31 percent of Americans have access to the Internet (West, 2008-1).

Surveys carried out by the United Nations Conference for Trade and Development (UNCTAD, 2002, UN, 2012) on the development of e-commerce in various parts of the world identifying the need in developing countries for transparency within government operations (Mitra, 2005). Electronic commerce (EC) has revolutionized the way the business and individuals interact. In the United States and Europe, the use of the Internet in the public sector has initiated a discussion about new forms of democracy. E-government can contribute to the course of democracy by providing all citizens access to government operations.

2.2 Vision, Principles and Priorities

A fully implemented e-government can break down bureaucratic barriers and move towards a better service level, connection, and protection that a government may want and need in every aspect of government's activity. This provides an opportunity not merely to manage and conduct business but also to gain wide access to what government is doing or intending to do, and how, and why. This will allow citizens more than ever before to take part in governmental decisions and become more knowledgeable about the performance of their elected representatives. Citizens will have the chance to become stable players in the process of determining and making government task (McGinnis, 2003). A broad vision of e-government should be shared by all citizens, i.e., encouraging stakeholders (citizens, officials, businesses, civil society groups and others) to participate in determining the vision. A shared vision can lead to a more successful implementation of e-government, i.e., supporting e-government project from beginning to end. Broad categories of goals that are commonly shared by citizens are as follows (The working group, 2002):

- Improving government productivity
- Improving services to citizens
- Improving the quality of life for disadvantaged communities and
- Improving the legal system and law enforcement.

E-government can help governments to come closer to this vision: an institution of the citizens, run by citizens, owned by citizens and for the citizens. A challenge for public sectors is to recognize today's trends and apply effective tools for creating and implementing policies that optimize the role of IT in their societies. These strategies are often novel, a result of the spread of relatively new technologies, such as the Internet, mobile devices, and e-mailing. This means that government agencies will need to choose wisely the most appropriate strategies. Naturally, each government's vision should also be accompanied by a short list of priority areas for the e-government project. Improvements in the following areas are typically recommended:

- Employee productivity
- Service delivery
- Information security
- IT infrastructure
- Data management
- IT management
- Human resource management
- Disaster recovery/management and

Up to 2007, research not only confirms the historic role governments played in affecting the employment of IT, but more significantly that IT is considered to be a main component of a national economic development policy. Today, no advanced nation can ignore the role of IT strategies in its economy (Ghapanchi, Albadvi and Zarei, 2008; Haigh and Griffiths, 2008; Cortada, Gupta, Le Noir, 2007).

One strategy is the effective use of IT by government agencies themselves to improve their internal productivity and increase their ability to serve citizens (as in providing 24 x 7 services). By providing citizens convenient access to information around the clock over the Internet, a government encourages citizens to access public services, data, and application forms using PCs and the Internet. Another popular tactic is requiring suppliers to provide their services using online procurement systems. In addition to helping lower the acquisition costs by governments, it compels suppliers to start using the Internet and related technologies in an "e-business" environment (Abramson and Harris, 2003). In recent years connectivity has been focused on making it possible for individuals, firms, and other institutions to access mobile (wireless) networks and the Internet. The availability of wireless Internet service should be one of the main strategies for any government. Costs of these services to individuals and organizations should be affordable for all citizens. The expansion of the Internet plays a vital role in the economic development activities of the public sector. This is a development that is attracting renewed attention to the subject of IT by economists and public policy experts (Breznitz, 2007, Baumol, Litan, Schramm, 2007) as more people and firms are becoming dependent on IT in going about their job and private lives over the past couple of decades.

2.3 Publications

The ability to search for a specific Web site or information is a basic facility needed by citizens. In this regard, one significant new development has been the formation of online service portals. This service is an important advantage for citizens because it reduces the need to search for and log on to various Web sites to order services or find information (please see Table 1.2). Citizens can connect in "one-stop" shopping, and locate what they require through a single site that integrates a range of government Web sites. One of the main dissatisfaction for citizens is going through enormous amounts of information to locate useful material (Haigh and Griffiths, 2008). Admission to updated publications, contact information and databases are vital to citizen access to information and improve democratic responsibility. Another way that e-government Web sites can provide the available information to citizens is by personalizing the Web site or letting citizens register to receive update publications. This is known as "push technology" (Murru, 2003). All these services utilize IT to expand access to government information, so that

citizens do not need to go to the government offices in person and possibly wait in long lines. This is the leading frame of e-government. Naturally, knowledge is required on how to manage publications, how to present information clearly online, and how users are likely to use the information.

2.4 Interaction, transparency and accessibility

A state should aim to have broadband connections for all public administrations. Broadband services can be offered on various technological platforms. Public Internet Access Points (PIAP), preferably with broadband connections, should be provided for all citizens in their communities. Internet is a perfect tool for obtaining public access to government information. Accessible and clear information can improve citizens' understanding and knowledge and may lead them to take part in the decision-making process, resulting in further development of democracy. With the increase in the Internet access and usage, the value of well-designed e-government Web site will become even more obvious (please see Table 1.2). Making it easier for citizens to access public information will improve participation and democracy. Information on how citizens or government officials look for information and like to receive it can be very helpful.

	2003	2004	2005	2006	2007	2008
Federal	47%	42%	44%	54%	54%	25%
State	33	37	40	43	46	19

Fig.1: Percentage of state and federal sites meeting W3C disability accessibility, Source: West 2008-2, P.5.

E-government sites should also consider disability access. World Wide Web Consortium (W3C) has introduced some standards regarding disability access. There has been some progress in this area on US government Web sites (see Fig.1). Further, e-government sites should provide foreign language accessibility as well. Public outreach is one of the most important characteristics of any e-government. One of the most promising benefits of e-government is its ability to draw citizens closer to their governments.

2.5 Transaction

The goal of transaction is to provide government services online (see Table 1.2). Government agencies can computerize particular processes and procedures, such as fine collection, tax collection and credit card purchases. By providing these services online, governments can attempt to restrict corruption and improve citizens' trust in government. Further, this can lead to increased productivity in both private and public sectors. Knowledge of efficiency and security is required for designing such computerized system. The study reported by West (2005-1), points out that there are several novel services available on US state portals, such as live online help desk and state tourism sites featuring online planning for travelers. However, at the same time, e-government web sites can face privacy and security issues.

	2001	2002	2003	2004	2005	2006	2007	2008
Prohibit Commercial Marketing	12%	39%	32%	40%	64%	58%	64%	53%
Prohibit Cookies	10	6	10	16	21	16	32	40
Prohibit Sharing Personal Information	13	36	31	36	65	54	37	51
Share Information with Law Enforcement	--	35	35	39	62	49	50	49
Use Computer Software to Monitor Traffic	8	37	24	28	46	60	65	57

Fig.2: Assessment of e-government privacy and security statements, Source: West, 2008-2, p.4.

2.6 Requirements Engineering and Management

E-government systems are complex e-service delivery software systems and like all complex, large software systems require proper engineering and management of the requirements. Accordingly, these systems should rely

on a wide range of techniques and industry best practices, such as prototyping, verification and validation, elicitation, specification, inspection, and traceability to ensure user satisfaction.

2.7 Quality Attributes of the Software Architecture

The architectural backbone that supports the development, delivery, and maintenance of the IT services provided by e-government sites play a significant role in managing the technological complexity involved in their implementations. In particular, the comprehensibility of the architecture as well as the consistency of the design decisions contained in the architecture are important factors in coping with the complexity of these systems.

3 Research Findings

3.1 Data analysis

The questionnaire was pre-tested and refined after the pre-test. The questionnaire (Appendix B) was available online to 262 (see Table 1.2) students taking nine different courses. All the courses were conducted as face-to-face (FTF). The online platform (D2L) was utilized as a supplement to the courses. In total 61 questionnaires out of 262 questionnaires (23%) were returned. After collecting the questionnaires, the authors analyzed each question from each respondent and summarized the data in the following tables.

Table 4. Questionnaire Response Rate

Factors	#	%
Total questionnaires returned	61	23
Total questionnaires not returned	201	77
Total Undergraduate participants	262	100

The first item in the questionnaire was related to gender of respondents. As Table 2 shows, about 44% of respondents were male and (56%) were female.

Table 5. Respondents' gender

Factors	#	%
Male	27	44
Female	34	56
Total	61	100

The second question was focusing on Internet usage. As Table 3 shows 57% responded that they used Internet daily, while 43% reported they used Internet weekly.

Table 6. Internet usage

Factors	#	%
Daily	35	57
Weekly	26	43
Monthly	0	0
Yearly	0	0
Total	61	100

The third question asked, why do you think there should be e-services by the USA government to the citizens (Respondents could choose more than one option). Table 4 shows that 23% reported convenient, 18% responded faster services, and 17% reported less cost for all, 16% reported available anytime and anywhere, and 15% responded more productive and efficient.

Table 7. Reasons for e-services by USA government

Factors	#	%
Convenient	45	23
Less cost for all	34	17
Faster service	36	18
More Transparent	12	6
Available any time, any where	31	16
More productive and efficient	30	15
No way to ignore application of IT regarding our daily tasks	9	4.5
Other	1	0.5
Total	198	100

The fourth question was focusing on why you think there should not be any e-services by the USA government to the citizens (*one may choose more than one option*). Table 5 shows 44% reported privacy issue, 24% reported computer illiteracy, 16% reported lack of access to a computer, and 12% responded lack of access to Internet.

Table 8. Factors for not having e-services by USA government

Factors	#	%
Privacy issue	44	44
Lack of access to Internet	12	12

Lack of access to a computer	16	16
Computer illiterate	24	24
Other	4	4
Total	100	100

Question five questioned whether USA e-government system (www.usa.gov) provide services (such as: Free online taxing, Job search, Immigration services, Student loans, Disaster help, etc.) for citizens? Table 6 shows 90% responded yes while 10% reported no.

Table 9. Data about USA e-Government personal system

Factors	#	%
Yes	55	90
No	6	10
Total	61	100

Question six asked: Does USA e-government system provide services (such as: Corporation online taxing, Business opportunities, Business law and regulation, Government auctions, Export portal, patents and trademarks filing, etc.) for businesses? Table 7 shows 90% responded yes while 10% reported no.

Table 10. Data about USA e-Government system business services

Factors	#	%
Yes	55	90
No	6	10
Total	61	100

The next question was focusing on whether USA e-government system provides services for other governments? As shown in Table 8, 77% responded yes while 23% reported no.

Table 11. Shows USA e-Government system services for other government

Factors	#	%
Yes	47	77
No	14	23
Total	61	100

Question eight asked: Does the USA e-government system (www.usa.gov) allow citizens more than ever before to take part in government decisions and become more knowledgeable about the performance of their elected representatives. As shown in Table 9, 82% responded yes, while 18% reported no.

Table 12. USA e-Government system services to support citizens' participation

Factors	#	%
Yes	50	82
No	11	18
Total	61	100

Question nine asked whether the USA e-government system (www.usa.gov) allows citizens to search for a specific Web site? As shown in Table 10, 87 % responded yes, while 13 % reported no.

Table 13. Data on USA e-government system services regarding citizens searching the Web

Factors	#	%
Yes	53	87
No	8	13
Total	61	100

Question ten asked: Does USA e-government system (www.usa.gov) allow citizens to register to receive updated publications? Table 11 shows that 93 % responded yes, while 7% reported no.

Table-14. Data on USA e-government system services regarding citizens receiving information.

Factors	#	%
Yes	57	93
No	4	7
Total	61	100

Next question asked whether citizens have access to broadband connection, i.e., Public Internet Access Points (PIAP)? Table 12 shows that 87% responded yes, while 13 % reported no.

Table 15. Shows USA e-Government system services regarding citizens access to Internet

Factors	#	%
Yes	53	87
No	8	13
Total	61	100

Question twelve was focusing on whether the USA e-government system considers disability access? As Table 13 shows, 87% of respondents answered yes and 13% responded no.

Table 16. Data on USA e-government system regarding disability access

Factors	#	%
Yes	53	87
No	8	13
Total	61	100

Last question asked if the USA e-government system provides foreign language accessibility. As shown in Table 14, 84% of respondents answered yes and 16% responded no.

Table 17. Data on the USA e-government system regarding foreign language accessibility

Factors	#	%
Yes	51	84
No	10	16
Total	61	100

Questions 2-3 contributed to most of the concepts proposed in the conceptual model. In other words, this supports all the seven propositions in the study. Question four contributes to the propositions 5-7. So, this means that the findings support those propositions. Questions 5-13 contribute to the propositions 3-7. It is clear that the findings support those propositions in the study.

Hypothesis testing:

RQ (Research Question): What concepts are involved in implementing e-government in order to provide e-services for citizens?

Q. Why you think there should be e-services by the USA government to the citizens?

Table-18. Data on e-services by USA government

Factors	#	%
Convenient	45	23
Less cost for all	34	17
Faster service	36	18
More Transparent	12	6
Available any time, any where	31	16

More productive and efficient	30	15
No way to ignore application of IT regarding our daily tasks	9	4.5
Other	1	0.5
Total	198	100

Based upon the facts, one has to do the Chi square test using the following formula:

$$x^2 = \sum \left[\frac{(f_0 - f_e)^2}{f_e} \right]$$

With k-1 degree of freedom, where (k=7)

k is the number of categories, (k= 8)

f₀ is an observed frequency in a particular category

f_e is expected frequency in a particular category (197/8= 25.6)

α = 0.05

df (k-1)= 14.067 (using table critical value of Chi square)

H₀: neutral response

H_a: non-neutral, i.e., the main factor of e-services by the USA government to the citizens is the convenience factor.

After plugging in all values in the formula, we have:

Table 19.

Factors	f₀	f_e	(f₀-f_e)	(f₀-f_e)²	(f₀-f_e)² / f_e
Convenient	45	24.75	20.25	410.0625	16.568
Less cost for all	34	24.75	9.25	85.5625	3.457
Faster service	36	24.75	11.25	126.5625	5.114
More Transparent	12	24.75	-12.75	162.5625	6.568
Available any time, any where	31	24.75	6.25	39.0625	1.578
More productive and efficient	30	24.75	5.25	27.5625	1.114
No way to ignore application of IT regarding our daily tasks	9	24.75	-15.75	248.0625	10.023
Other	1	24.75	-23.75	564.0625	22.79
Total	198		0		67.212

$$x^2 = 67$$

As the value of 67 lies in the region to right 14.067, then H₀ is rejected at the 0.05 significant level in favor of H_a, i.e., the data support H₅₋₇. So, one can conclude that the main factor of e-services by the USA government to the citizens is convenient.

Q. Why you think there should not be any e-services by the USA government to the citizens.

Data from Table 8: factors for not having e-services by USA government

Factors	#	%
Privacy issue	44	44
Lack of access to Internet	12	12
Lack of access to a computer	16	16
Computer illiterate	24	24
Other	4	4
Total	100	100

With 5 categories ($k = 5$) and 4 degrees of freedom
 f_e is expected frequency in a particular category ($100/5 = 20$)

$\alpha = 0.05$

df ($k-1$)= 9.488 (using table critical value of Chi square)

H₀ : neutral response

Ha: non-neutral, i.e., the main factor for not having any e-service by the USA government to the citizens is the privacy issue.

Calculated test statistic value: $x^2 = 46$

As the value of 46 lies in the region to right 9.488, H₀ is rejected at the 0.05 significance level in favor of Ha. So the main factor of not having any e-service by the USA government to the citizens is the privacy issue.

Q. Does USA e-government system provide services (such as: Free online taxing, Job search, Immigration services, Student loans, Disaster help, and ...) for citizens?

Data from Table 9: Data about USA e-government system

Factors	#	%
Yes	55	90
No	6	10
Total	61	100

With $k = 2$ categories and 1 degree of freedom

f_e = expected frequency in a particular category = $61/2 = 30.50$

$\alpha = 0.05$

df ($k-1$)= 3.841 (using table critical value of Chi square)

Calculated test statistic value: $x^2 = 39$

H₀ : neutral response and **Ha**: non-neutral

As the value of 39 lies in the region to right 3.84, then H₀ is rejected at the 0.05 significance level in favor of Ha.

Applying the statistical hypothesis test to the rest of the questions support the conceptual model.

4 Conceptual Model

Designing an efficient and successful e-government is a very challenging and demanding process (Sagheb-Tehrani M, 2007). Theory is important for e-government research and concepts (constructs) are the main building blocks of

theory. A concept can be an idea expressed as a symbol or in words (Neuman, 2003). Thus the conceptual model presented here may contribute to the theory of correlated fields. Figure-3 shows an e-government conceptual model with its relationships.

The conceptual model may suggest a number of propositions regarding the impacts of some concepts related to e-government. The aim is to suggest important issues that need to be investigated further.

Hypothesis 1: Knowledge management is required to shape the concepts of IT, vision, publication, interaction, and transaction.

Hypothesis 2: The concept of IT is based upon other concepts such as: IT blue print, communication, IT priorities, and IT strategies.

Hypothesis 3: The concept of vision is derived from concepts of citizen centeredness and vision priorities.

Hypothesis 4: The concept of publication is formed by the concepts of update, personalization, and push technology.

Hypothesis 5: The concept of interaction is created by the concepts of PIAP, transparency and accessibility.

Hypothesis 6: The concept of transaction is based upon the concepts of security, privacy and novel services.

Hypothesis 7: The concept of e-government is generated by the concepts of IT, vision, publication, interaction and transaction.

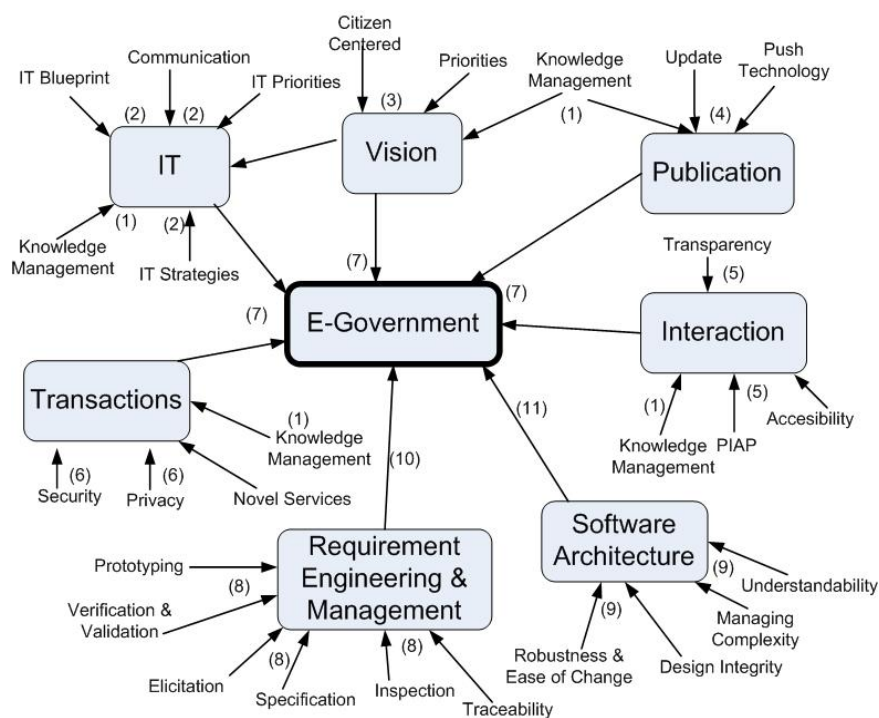


Fig.3: E-government conceptual model

Hypothesis 8: The successful delivery of e-government requires the application of a wide range of requirements engineering and management practices, including prototyping, verification and validation, elicitation, specification, inspection, and traceability.

Hypothesis 9: The quality attributes of the software architecture for e-government systems, including the

robustness of the architecture, its ease of change, understandability (i.e., cognitive complexity), and design integrity (i.e., consistency), play a significant role in managing the technological complexity in e-government implementation.

Hypothesis 10: The processes of requirements engineering and management play significant roles in successful implementations of e-government systems.

Hypothesis 11: The quality of the software architecture for e-government systems has a direct impact on e-government delivery both during the original system development and the ongoing enhancements and maintenance phases.

5. Conclusions

E-government requires effective planning, implementation, and management. The study reported here argued that several key success factors are appropriate for e-government implementation. About one hundred e-government Web sites were examined upon those key success factors and a conceptual model of e-government was put forward. The conceptual model allows one to comprehend very broadly the concept of e-government, which, in turn, can help with the design of more successful e-government projects. The work presented here may supply a basis for future research in the related disciplines. One direction would be to use the conceptual model presented here in a case study. Another fruitful avenue for future research is to use the concepts developed in this paper in developing a domain catalog (Ghazarian 2011) for e-government systems, which can then be used to guide the systematic development of e-government systems.

APPENDIX A:

List of some related links to electronic governments

<http://www.keshilliministrave.al/?fq=brenda&r=&kid=43>
<http://www.cg.gov.dz/index.php>
<http://www.govern.ad/>
<http://www.angola.org/>
<http://www.argentina.gob.ar/>
<http://www.australia.gov.au>
<http://www.austria.gv.at>
<http://www.bahamas.gov.bs>
<http://www.gov.bb/>
<http://www.belarus.by/en/>
<http://www.belgium.be/en/>
<http://www.canada.gc.ca>
<http://english.gov.cn/>
<http://wsp.presidencia.gov.co/En/Paginas/Presidency.aspx>
<http://www.congo-site.com/>
<http://www.cubagob.cu/>
<http://www.vlada.cz/en/default.htm>
<http://www.denmark.dk/en>
<http://dominicanrepublic.com>
<http://www.egypt.gov.eg/english/>
<http://www.presidencia.gob.sv/>
<http://valitsus.ee/en/government>
<http://www.fiji.gov.fj/>
<http://government.fi/etusivu/en.jsp>
<http://www.un.int/wcm/content/site/gambia/>
http://embassy.mfa.gov.ge/index.php?lang_id=GEO&sec_id=5&lang_id=EN

<http://www.new-york-un.diplo.de/Vertretung/newyorkvn/en/Startseite.html>
<http://www.greeceun.org/greeceun/content/Folder.aspx?d=3&rd=12106234&f=1272&rf=629020616&m=1&rm=0&l=1>
<http://www.guatemalaun.org/index.cfm>
http://www.un.int/guinea/Guinea_pgs/mst_fm6.htm
<http://www.un.int/wcm/content/site/haiti/>
<http://www.un.int/wcm/content/site/haiti/>
http://www.mfa.gov.hu/kulkepviselet/New_York_ENSZ/en/
<http://www.iceland.is/iceland-abroad/un/nyc/>
<http://www.un.int/india/>
<http://www.indonesiamission-ny.org/index.html>
<http://www.irelandunnewyork.org/home/index.aspx?id=81115>
<http://israel-un.mfa.gov.il/media-center>
http://www.italyun.esteri.it/Rappresentanza_ONU/
<http://www.un.int/jamaica/>
<http://www.un.int/wcm/content/site/jordan>
<http://www.kazakhstanun.org/>
<http://kenyaun.org/index.html>
<http://www.kuwaitmission.com/>
<http://www.un.int/wcm/content/site/latvia>
<http://unifil.unmissions.org/Default.aspx?tabid=1499>
<http://www.liberia-un.org/index.html>
<http://mission-un-ny.mfa.lt/>
<http://newyork-un.mae.lu/en>
<http://www.nationsonline.org/oneworld/madagascar.htm#News>
<http://www.malawi.gov.mw/>
<http://www.maliembassy.us>

APPENDIX B:

Student Questionnaire

The following questionnaire is designed to conduct a research regarding the expectations that influence the satisfaction level of citizens' on USA e-Government system (www.usa.gov). The following questionnaire will be used to gain a better understanding of e-Government. The answers you provide are confidential and will not affect your grade in any way. Please answer the following questions based on your experience, opinions, and knowledge. There is no right or wrong answers. All responses are confidential and will be analyzed at the aggregate level. Your cooperation will be really appreciated. I am the only person who will have access to data. I will destroy the data after 5 years when the research gets published in a journal. Your participation is totally voluntary and you may quit anytime during the questionnaire. This research has been approved by Human Subject Committee of XX University. If you have any questions about your rights as a human research subject, please contact HSC (xxx-xxx-xxxx). If you have any questions about the research, please contact me (Tel: XXX-XXX-XXXX or email:XXXXXXXX).

Thank you in advance for taking the time to complete this questionnaire ☺

Name:..... Date: Course:

1. Sex:

- Female
- Male

2. Internet usage:

- Daily
- Weekly
- Monthly
- Yearly

3. Why do you think there should be e-services by the USA government for the citizens (*you may choose more than one option*)?

- Convenient
- Less cost for all
- Faster service
- More transparent
- Available any time, any where
- More productive and efficient
- No way to ignore application of information technology regarding our daily tasks
- Other.....

4. Why do you think there should not be any e-services provided by the USA government to the citizens (*you may choose more than one option*)?

- Privacy issue
- Lack of access to Internet
- Lack of access to a computer
- Computer illiterate
- Other.....

5. Does USA e-Government system (www.usa.gov) provide services (such as: Free online taxing, Job search, Immigration services, Student loans, Disaster help, and ...) for citizens?

- Yes
- No

6. Does USA e-Government system (www.usa.gov) provide services (such as: Corporation online taxing, Business opportunities, Business law and regulation, Government auctions, Export portal, patents and trademarks filing, and ...) for businesses?
- Yes
 - No
7. Does USA e-Government system (www.usa.gov) provide services for other governments? (such as: Background Investigation application, For sale to other government buyers, and...).
- Yes
 - No
8. Does USA e-Government system (www.usa.gov) allow citizens more than ever before to take part in government decisions and become more knowledgeable of the performance of their elected representatives.
- Yes
 - No
9. Does USA e-Government system (www.usa.gov) allow citizens to search for a specific Web site?
- Yes
 - No
10. Does USA e-Government system (www.usa.gov) allow citizens to register to receive updated publications?
- Yes
 - No
11. Have citizens access to broadband connection, i.e., Public Internet Access Points (PIAP)?
- Yes
 - No
12. Does USA e-Government system (www.usa.gov) consider disability access?
- Yes
 - No
13. Does USA e-Government system (www.usa.gov) provide foreign language accessibility?
- Yes
 - No

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