

# Factors Influencing Intention to use E-Government Services among Iran Citizens

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## Abstract

**Objectives:** Electronic government is the way the Government works and tries to get better interactions with people and businesses with better access, connectivity, providing better systems and services. **Methods/Analysis:** The research undertaken utilizes quantitative method of data collection for key data. In this research, the population is the citizens in Iran and the unit of analysis is the citizens who worked in some organization in Iran. Data is analyzed by SPSS software (Multiple Regression Analysis). 250 questionnaires were randomly distributed to the society. The questionnaire papers assigned were given in 5 main cities of Iran, which were Tehran, Isfahan, Shiraz, Tabriz, Mashhad. 118 questionnaire papers were removed; these are those who do not complete the questionnaires properly and completely. Finally, 132 questionnaire papers were collected properly. **Findings:** According to the findings from this research, the government must emphasize the social issue about how to socialize the service in e-government. Government should be proactive in building the awareness of citizens rather than concentrating on the technical issue because without the awareness and adoption of citizens, the technology used is just a waste of budget. The nature of the globalization process affects countries in order to reduce costs and increase revenue per advent of electronic government. Results are mixed indirect rather than have the same meaning as compared with direct outputs. This research can help governments collect data about factors which have an effect on Iran citizens' intention to use electronic government services. It will help the government to find out the most important areas that need to be considered. Finally, the most important outcome expected from this study is to increase citizens' acceptance of Electronic government in the future. **Novelty/Improvement:** Identify the most important factors that have an effect on citizens of Iran intention to make use of electronic government service.

**Keywords:** E-government, E-government Structure, E-Government in Iran Citizens, Feasibility of e-Government Establishment in Iran, Necessity of Electronic Government

## 1. Introduction

Use of Internet in government operation is known as electronic government<sup>1</sup>. Electronic government is the way the Government works and tries to get better interactions with people and businesses with better access, connectivity, providing better systems and services. Unlike traditional government procedures, electronic government is known by attributes such as: 1. Broad use of communication technology, 2. The easy way which information can be collected, used and processed by several parties, 3. The uncongenial character of the online environment. The e-Government with the use of a wide technological infrastructure is

a new way for interaction with government websites. It will indirectly raise distance among citizens and government, ambiguity and consider both government infrastructure interfaces and the reliability of the fundamental Internet. These differences raise uncertainty and decrease the perception of citizens to control. It will provide a barrier to electronic Government acceptance. It can provide effective, transactional, informational exchanges between the citizens and the government. Economist Intelligence Unit performed an online research to test some significant transactions that included registration of businesses and tax payments, etc. This unit collected data of some countries' payments communications, and education,

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political and economic context. Based on the mentioned study, Canada has received the highest score for government e-payments; United Kingdom comes second and third is Germany and the United States. The ranking is followed by Australia, Sweden, and South Korea correspondingly. These countries' governments have fine communications and information technology to allow citizens to use services of e-government.

In Asia, Hong Kong is the 9th country, Singapore is 10th and Taiwan is 11th. These countries' governments pushed the citizens into using online services to develop their economy. The report illustrated that the use of electronic services provided by Iranian government is still low. The report of Government E-Payment Adoption Ranking (GEAR) referred that more study is required to conclude factors influencing citizens' purpose to use electronic government service in Iran. In the electronic government matters such as the privacy system and appropriate security, confidentiality and authentication, infrastructure, technical issue, social issues, accessibility, usability, maintainability and other factors must be studied to raise the citizens' intention to use electronic government services. This research helps to increase the electronic government services among Iranians. It also helps the policy makers to gather more information about the factors that influence citizens' intention to use electronic government services in Iran. So, this helps to create better practical security, better understanding and to control policies which will improve the websites of the government better and citizens who are more concerned. It helps the government to identify the most important area which needs to be improved. Finally, the most significant factor expected from this research is to raise the citizens' confidence for using the electronic government services in the future.

## 2. E-Government

E-government is a new concept that has gained the attention of scholars all around the world. As a result, a number of researches have been done on implementing e-government schemes, technical barriers and their solutions, improving service quality, infrastructure, and maintenance of new systems. In<sup>2</sup> is defined e-government. Electronic government is a comprehensive system that links citizens, businesses and governments across the world; also it will provide fast and convenient access to the government services<sup>3</sup>. E-government uses latest technology and newest methods to connect citizens and private sector and satisfies

their needs. Many scholars propose that the Internet is the best option for implementation of e-government, which is a combination of rapid access worldwide, and latest and most efficient IT equipment at the same time to back-up the data and run the whole system<sup>4</sup>. E-government is a vast area that provides access and linkage between G2G, G2B and G2C. In fact, it is more than just providing the same forms and regulations from the real agencies; it should offer more services in terms of enhancement of service delivery. In people's view, e-government is a fast way of taking care of citizens' urgent needs. Despite the fact that developed countries are already using e-government, developing countries have started to show that they are looking for the online government systems. However, as the whole e-government concept is relatively new in developing countries, they should consider many factors to prevent potential negative impacts on people's lives and business procedures. Therefore, proper planning and scheduling is necessary in such cases.

### 2.1 The E-government Structure

The main objective of electronic government is providing a "digital environment" to provide information, build relationships and deliver services. Provision of comprehensive information on securities enforcement processes and forms are available on the Internet. Providing information and facilities to record and archive electronic forms and provide official notification via e-mail and the meetings about subjects and people of interest, are examples of establishing communication. Perform complex tasks related to the activities of public and commercial needs of the people (to the extent permitted by law) and needs of the clients, governmental agencies and public offices are examples of services. In this regard, the use of modern information technology service level offered by an institution or government offices will expand dramatically. Concurrent with the changes in the law (some countries) that arise, the executive processes that previously required a physical presence by the electronic method would be processed. For example, electronic signatures are legally valid and the value is signed by hand on paper. This means that there is no problem in order to develop e-government in public service. It could be argued that the purpose of electronic government, the potential of information and communication technology to change government of the central agency (Agency-centric) and limited services to the citizens of central (citizen-centric) and government services to citizens of the community, merchants and others. In addition, some of the objectives

of e-government are as follows: to provide the best services, positive impact on the cost and efficiency of the service, and more people's participation in public affairs and the provision and use of appropriate methods to manage society<sup>4</sup>. Necessity of Electronic Government one of the most important issues in the information society is electronic government. Electronic government is to provide conditions that allow governments to board their services and provide citizens the whole week. This has been the agenda of governments in recent years and authorities have mobilized their forces in fulfillment of such conditions and process that seek political, economic and social reform with the help of new technology and communications and information services through more efficient ways to engage citizens. In fact, deployment and proliferation of electronic government, often in the direction of changes in governmental processes such as decentralization, improves the efficiency and effectiveness. There is no single definition about electronic government and the problem of dynamic and changing nature of technology<sup>5</sup>. Today, using of information and communication technology to make improvement in the efficiency, effectiveness and transparency and accountability in government monetary and exchange of information between the government and its affiliated organizations, between government and citizens and between government and private sector electronic government refers. Electronic government in Iran is now active in some areas. There are approximately 1,000 government websites in Iran; despite all the shortcomings and the shortcomings of digital information on the web, there is a formal part of the country to carry digital public relations. Electronic government offices in various states of the country have been installed. They will do police and registration services and this is a step forward in delivering electronic services to citizens in Iran<sup>6</sup>. However, the Electronic government with the procedures established in Western countries is structurally backward and national executive body created a comprehensive plan in this regard; a twenty-year perspective, a guide with a lot of obstacles ahead. Establishment of an effective strategy in the field of Electronic government makes significant improvements such as the following will result in the government.

## 2.2 Feasibility of e-Government and its Establishment in Iran

Increasing communication and its impact on the economic, social and political communities, the complexities arising from technological advances are rapid

and efficient government and government-to-date in order to perform necessary tasks. About how the government works, the internal mechanism and its relationship with other community agencies have been shown in different theories. Despite the methodological differences between these theories, they all insist this issue that the government should enhance their performance duties. The most effective ways to improve government efficiency is implementation and deployment of systems known as electronic government. The electronic government is one of the important phenomena resulting from the use of ICT and is a profound change in modern human's lifestyle. E-government is one of the important phenomena resulting from the use of ICT developments in the modern human lifestyle. This way, the potential to help build a relationship, smooth, and effective inter-governmental and governmental institutions with the citizens and also provide information and services affordable, immediate and comprehensive use in all business groups is made possible<sup>6</sup>. These reforms aim to improve the practices, procedures and administrative process and reduce administrative bureaucracy and red tape. These problems are long-governmental organizations and administrative divisions and turmoil has affected the country and led to complaints and external and internal grievances. These issues in governmental organizations somehow are making some problems. Complex bureaucracy, overlapping and sometimes-conflicting goals of these organizations due to organizational goals and the result of dissatisfaction with such a trend has emerged. On the other hand, the people's expectations about service and quality of products as well as how it is increasingly changing and government must be responsive to the needs and expectations.

## 2.3 E-Government and Trends in Iran Citizens

One of the most important issues in the information society is the problem with the government. E-government is meant to provide conditions that allow governments to board their services and provide citizens all week. This is seriously on the agenda of governments in recent years that has been done, and intelligence officials have mobilized their forces in such circumstances and have tried to realize that the political processes, economic and social reform with the help of information and communication technology and make more effective ways to deliver services to citizens. Today, ICT is used to better efficiency

and transparency and accountability of monetary and exchange of information within the government, between government and its affiliated organizations, between government and citizens and between government and private sector e-government. E-government in Iran, although it is an independent charge, it is active in some areas<sup>6</sup>. Close to 1,000 government websites in Iran, despite all the shortcomings of digital information on the web there is a formal, public relations, digital part of the country. Government offices in various provinces of the country have installed various services and the police have registered and this is a step forward in the realization of the electronic services to citizens in Iran<sup>6</sup>. Government gives tens of millions of dollars for the plan, which is called "TAKFA" to the private sector to strengthen the scientific infrastructure and the private sector in the IT with an indirect impact on the e-government development in Iran. However, the e-government has procedures established in Western countries, and is suffering from backwardness and administrative structure that will create national and comprehensive plan in this regard, in the country's twenty-year perspective; there are many obstacles ahead.

### 3. Independent Variables

#### 3.1 Perceived Ease of Used

Perceived ease of use is the degree that the user of a system or technology finds working with it convenient and easy. Complexity of the technology or system can lead to lower use of it. Complexity is the degree that the system or technology is perceived to be difficult to work with. Perceived ease of use was found to have positive correlation with perceived usefulness<sup>7</sup>. A good example of authentication is sending certain codes to a person's cell phone to check the validity of the process. In a recent study, most of the participants declared that using online services is easy to learn, however almost 63% of them mentioned that online government portals should increase the ease of use especially by those who were not that familiar with the Internet<sup>8</sup>.

#### 3.2 Technology Acceptance (TAM Model)

"The model is based on UTAUT technology acceptance model"<sup>9</sup>. UTAUT showed to be very reliable, as compared with the previous models and they are able to design 70% of the user acceptance technology, compared with the previous models which were about 40%<sup>10</sup>.

As a result, UTAUT is known as a more comprehensive and enhanced version of acceptance theory that looks at better characteristics and factors. UTAUT can be divided into four key elements; average performance, expected effort, social impact and circumstances that make it easier<sup>11</sup>. INUTAUT model, the moderating variables are age of users, their previous background and experiences, and voluntary use. On the other hand, Reasoned Action Theory was one of the pioneers in explaining users' acceptance and usage behavior<sup>12</sup>. In the case of Iran, while the number of studies is limited, these few studies are in agreement with the international findings. For example, a research on e-government in Iran showed that Perceived usefulness was a highly effective element in the final users' behavior<sup>13</sup>.

#### 3.3 Trust Worthiness

Another major concept of using online services is trustworthiness. Trust means that one believes that another one's promise is reliable, and will be fulfilled in the future as mentioned. In the recent years, many scholars have added trust as one of the key factors in electronic government implementation<sup>14</sup>. Trustworthiness is the degree that users believe that online environment can be trusted, relied on, and their perceived degree of integrity of the online page or service. It should be noted that online users not only should believe in their government, but also they should believe in the trustworthiness of the online service to use them. In many countries, low levels of trustworthiness, lead to failure of incomplete application of e-government. There are some characteristics like competence, predictability, and integrity that are used to create trust in another person. In other words, institutional trust is the root of citizens' perception of rules, regulations, and legal matters. Trust is based on several factors including competence, predictability, generosity, and integrity<sup>14</sup>. Competence means that users estimate the degree of abilities of the online service provider, such as their skills and whether they have the certain experience to satisfy their needs. Predictability is the forecasted outcome of using online service based on the service provider's past. In such cases, some names have good reputations, while some may not have. Logically, users tend to use servers with good reputation. Generosity is the users' judgment about service provider's ethics and considering the good of all. Integrity is the degree that users assess the online service provider's honesty and loyalty to their words. Each of these attributes can be measured by

using the user's previous experience with the same service provider, or from secondary data.

### 3.4 Coordination

Coordination is another main reason of failure or success of e-government implementation. Coordination can be the Internet connection and its quality and maintenance. Successful e-government practices require uninterrupted access to the high speed Internet. Lack of speed or interruption of service can ruin the whole system. Studies show that online banking users tend to use online services more when the Internet speed is acceptable<sup>15</sup>. Awareness of the services is another important factor. Studies show that one of the main reasons mentioned by online banking potential users not using the online services was unawareness of such services in the first<sup>16</sup>. It was found, that there are still plenty of people who are not aware of simple services such as paying bills online, or online transactions. The low level of awareness, can lead to low level of perceived usefulness. In many cases, online services are new to the users and their low level of awareness about the available services can lead to stop using the online services<sup>17</sup>.

The social influence of friends, coworkers, and family members is another contributing factor to user's usage and acceptance of technology. Social influence is the perception of an individual of those close to him about what he does and the decisions he makes. In case of e-government, it was shown that citizens tend to find online services more appealing if their colleagues and friend use them and find them effective. Social influence also impacts the perceived ease of use<sup>18</sup>. In addition, they tend to find the online services much easier if government offers training and ways to use the help sessions. The positive impact of such help offers was found in online banking, online shopping, and e learning<sup>18</sup>.

### 3.5 Uncertainty Avoidance

The factor of avoidance uncertainty is which refers to the large number of people who feeling threat by unreliability, as well as the importance of norms and standards. Avoidance uncertainty reflects the extent of community members who attempt to deal with anxiety by reducing uncertainty. In<sup>8</sup> indicated which trust in the Internet is likely to effect the adoption of electronic government services. Their trust to Internet is about the electronic transaction have done by fraud and hacking". With regard to electronic government services, with greater awareness

of the citizens from the government and electronic services interests, the more useful this recognition of electronic services<sup>14</sup>.

### 3.6 Compatibility

A study discussing the use of electronic government services agrees that trustworthiness and perceived ease of use have a direct positive relationship with the faith of citizens in the use of electronic government service<sup>19</sup>. The decision is based on whether the individual uses the technology on the perception of technologies like compatibility, comparative benefits, and the complex view of the image<sup>20</sup>.

## 4. Problem Statement

The critical objective of this research is the first category: The barriers which have a direct impact on the willingness of citizens to use electronic government. Thus, to improve the electronic government system, they must look at the barriers that the citizens must extract and then they must develop a comprehensive plan remove the barriers, and increase the level of quality of services that add value to users, to improve citizens' awareness regarding the use of electronic services. Finally, they will have high usage. "Based on the Government Electronic Payment Adoption Ranking (GEAR), Iran's rank was 37<sup>th</sup> in 43 countries. This research indicated that further studies are needed to be done to analyses factors affecting the acceptance to use electronic services among Iranian citizens". Hence, in this research, the problem statement is to identify the most important factors that have an effect on citizens of Iran intention to make use of electronic government service.

## 5. Research Questions

- How does compatibility affect the citizens' intention to make use of electronic government service?
- What is the role of trustworthiness in citizens' intention to make use of electronic government service?
- What is the role of perceived ease of use in citizens' intention to make use of electronic government service?
- How does coordination influence citizens' intention to make use of electronic government service?
- How does technology acceptance affect citizens' intention to make use of electronic government service?

- What is the effect of uncertainty avoidance on citizens' intention to make use of electronic government service?

## 6. Research Objectives

- To investigate the effect of compatibility on citizen's intention to make use of electronic government service.
- To identify the effect of trustworthiness on citizen's intention to make use of electronic government service.
- To show the effect of perceived ease of use on citizens' intention to make use of electronic government service.
- To investigate the effect of weak coordination in the development and application of relevant services on citizen's intention to make use of electronic government service.
- To evaluate the effect of technology acceptance on citizen's intention to make use of electronic government service.
- To identify the effect of uncertainty avoidance on citizen's intention to make use of electronic government service.

## 7. Research Hypothesis

- H1: There is significant relationship between the intention of using services of e-governments and compatibility.
- H2: There is significant correlation between trustworthiness and citizens' intention to make use of electronic government services.
- H3: There is significant relationship between perceived ease of use on citizens' intention to make use of electronic government services.
- H4: There is significant relationship between coordination and citizens' intention to make use of electronic government services.
- H5: There is significant relationship between technology acceptance and citizens' intention to make use of electronic government services.
- H6: There is significant relationship between uncertainty avoidance and citizens' intention to make use of electronic government services.

## 8. Underlying Theory

Based on many previous studies, the most dominant among theories in this area are 'Diffusion of Innovation

(DOI)', 'Motivational Model (MM)' and 'Theory of Planned Behavior (TPB)'.

## 9. Research Methodology

Two types of studies are being considered; those are causal and correlation studies. The goal of this study is to identify whether a connection exists between those studied variables. Therefore, examination type that is going to be used here is the correlation study. This research takes place in general Society with the least intervention of researcher following the ordinary workflow (which means to expand according to the theoretical framework, the assigned researcher collects related data followed by analyzing them to dig up results) performed. In general, a trial could be performed whether on a natural environment (no artificial settings) or on an artificial environment (manual-settings). Correlation studies are not carried out in artificial settings all the time; quite the contrary, these causal studies are performed in an artificial setup. Among the non-contrived setting, the correlation study-carried out in the sample society with the least interference from researchers-is so called "field study". The current research is concerned about the community and individual citizens finding out what factors influence the intention of using services of e-government. Therefore, the analysis unit is considered individual data throughout the ensuing data analysis phase is collected. Data for the current research is collected in a 2 weeks' period.

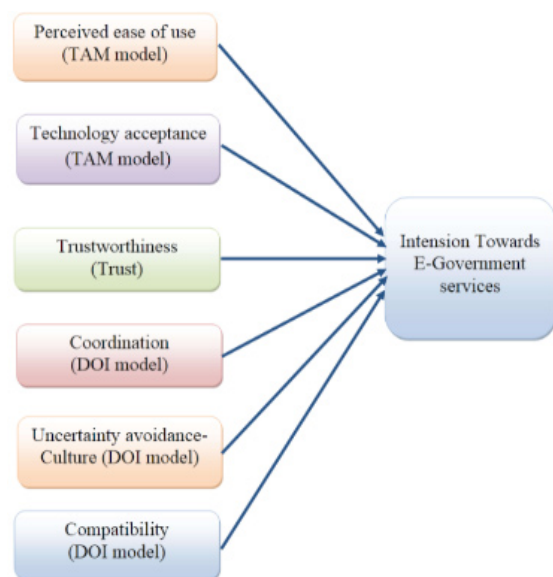


Figure 1. Presents the proposed framework for this study.

## 9.1 Investigation Types

Characteristics of investigation rely on the research questions that are first aimed. Additionally, selecting analysis type identifies the degree of the researchers' intervention on the main body of the research. As already discussed, two types of studies are out there: Causal as well as correlation.

## 9.2 Research Design

In this research, the population, which is going to be analyzed, is the citizens in Iran and the unit of analysis is the citizens who worked in some organization in Iran.

- As primary data for the type of the data the method of data collection will be by companies' interview (Responsible persons), self-administered survey (Questionnaire).
- As secondary data for the type of data, the method of data collection will be collecting data from books, journals, websites, newspapers and company reports and files.

The sampling approach for this research will be non-probability sampling. Data will be analyzed by SPSS software (Multiple Regression Analysis).

## 9.3 Sample Society, Size and Technique

Sample society for the research presented in this report is the Iranian general public. Particularly, the sample society is unique across all industries and organizations; they have experiences in dealing with services of e-governments. Sampling is a method of picking up an adequate amount of elements from the society. Through a precise sample selection, the properties of the elements of the population elements are possible<sup>21</sup>. The non-probability convenience sampling plan has been implemented since this is a practical option, simultaneously because of time and money limitation as well as limits in carrying out the present study efforts. The suitable ratio will be ten to one ratio (10 to 1) of autonomous variables<sup>22</sup>. This implies that the least number of contributors has to be hundred thirty. 250 questionnaires were randomly distributed to the society. The questionnaire papers are assigned was given in 5 main cities of Iran, which was Tehran, Isfahan, Shiraz, Tabriz, Mashhad. 118 questionnaire papers were removed; these are those who do not complete the questionnaires properly and completely. Finally, 132 questionnaire papers were collected properly.

## 9.4. Data Collection

The research under taken here utilizes quantitative method of data collection for key data. The use of Quantitative method is suggested whenever we want to collect and process the data analytically. Data in the form of digital numbers called numeric and the researcher is able to form statistical outcome<sup>23</sup>. This method is fit and good enough to be used when there is a need to disseminate and apply data from a sample model of society to a real community to find patterns and trends. Questionnaires were distributed in two different ways, the hard copy and an electronic copy. Questionnaire is an effective way to collect data primarily from shareholders if the researcher is fully aware of the requirements and it is a way to measure the variables in the interest<sup>24</sup>. The contributors were given a week to fill up the entire questionnaire set and return it in person or through e-mail depending on the most convenient way for the contributors. To retrieve the results of this descriptive study and to compare them analytically, the current study has to gain a well-built conceptual basis and then create a comparison based on a systematic evaluation. For that sake, this study uses primary sources of data that are being achieved through the following systematically procedures. To collect primary data, survey method was used. This study controls and utilizes a measuring tool in the format of questionnaire to identify the obstacles of e-government as alleged by the customers. Then, sections were rated and a questionnaire was made up on that basis. The questionnaire contains two parts. First part is dedicated to barriers and second part carries some questions about benefits; this could be viewed as a command presort of questionnaire. Barriers and benefits extract are monitored throughout the opening questions based on a 7-point scale as opening questions and is integrated in each section to extract the possible and expected challenges and benefits that may not yet be understood. Considering the very fact that the questionnaire contributors MUST be Iranian, questions in the mentioned questionnaire was converted into Farsi. Those raw data were then deposited, integrated and processed to be statistically used using right tools.

## 9.5 Data Processing and Analysis

When primary data sources were collected successfully, a well-defined model of successful research and research hypotheses will be created; key data should firstly be analyzed statistically not only to test the hypotheses, but also

to form additional insights on the cons and pros of the mentioned system in Iran. The steps below must be done: Data clearing, data codification, data analysis.

### 9.6 Data Clearing

Completed questionnaire has the potential of having missed data, worthless parts, vague answers and other statistical sources of disruption. By compensating data of these entries, it is to remove in addition to refining data and storing them on spreadsheets for further analysis in the future.

### 9.7 Data Codification

Those questions and variables are entered in a special format using SPSS sheet. The scale of the variables and their values will be defined and the variables are arranged in a format that can be used for different and distinct statistical tests using guidelines of SPSS.

### 9.8 Data Analysis

Before analysis, the formatted data is checked for any defects or errors happened by any chance in the phase of data entry prior to any other phase. A demographic analysis will be conducted to illustrate the characteristics of contributors. Then, for every disadvantage or advantage, the normality assumption must be examined. Given that data has been normally distributed, the one-sample t-test to mid-point as rt-scale would be used to test the method of analysis moreover, provided that the data proved noteworthy removal from normality, binomial method would be utilized in order to analyze the recent cons and pros of electronic government system. As a final point, the comments given by contributors in response to the opening question about other obstacles and benefits that were not listed in the subjective section of the questionnaire would be analyzed.

### 9.9 Developing a Sampling Plan

Table 1 explains developing a sampling plan.

## 10. Results and Discussion

### 10.1 Age of Respondents

Analyzing the age of respondents using the frequency analysis depicted that the distribution of the respondents' age who were a total of 132 people are as follows: 19.7% of

**Table 1.** Developing a sampling plan

Research Design	Description
Type	Hypothesis
The Population	Citizens in Iran
Unit of Analysis	Citizens who worked in some organization in Iran
Method of Data Collection	Primary data – companies' interview (Responsible persons), self-administered survey (Questionnaire) Secondary data which were collected from books, journals, websites, newspapers and company reports and files.
Select the Appropriate Sampling Method	Non-probability sampling
Data Analysis	Multiple Regression Analysis

the respondents were among the 20-30 year olds, 40.9% of them belonged to the 30-40 year-old group, 25.8% were 40-50 year olds, and the remaining 13.6% were in the group of 50 year olds and above.

### 10.2 Analysis

In accordance with what was said about the research methodology in the previous chapters, six types of e-government barrier and obstacles that were observed and understood by the users, were discovered which are: Confidentiality, ease of use, enjoys capacity, reliability, safety and visual attractiveness. In the primary phase to explore whether these barriers that have been perceived by the users exist in Iran's e-government, the normality of the variables was calculated. In case each variable has a normal distribution in the Likert scale, the method chosen for analyzing would be one-sample t-test in which the concentration would be on Likert scale "(which is 4 in the Likert 7-point)". In this system of analyzing, in the event that the average data for each barrier (like ease of use) did not show significant difference from mid-point Likert scale, it is safe to make the conclusion that the variable in question is not considered as a barrier for Iran's e-government. However, in the event that the average data for each barrier (like ease of use) betrayed significant difference from mid-point Likert scale, the average response must be considered. If the average response is also more than midpoint of Likert scale, it is safe to assume that the variable in question is an e-government barrier that was perceived by the users; and if the average response



is under the midpoint of Likert scale, it is safe to assume that the variable in question is not an obstacle for the e-government.

Because the inference in a parametric analyzing such as t-test is normal distribution, in case it was not possible for the data of a variable to go through the normality test, a non-parametric analyzing should be conducted. A method of analyzing that is not parametric in a descriptive research for supporting the fact that a variable exists is the binomial test. The limit in this analytic investigation is set at 4 (which is the midpoint in Likert scale). Therefore, the binomial test will investigate the null hypothesis which is that the possibility of having responses above 4 is as much the possibility of having responses below that. In case the p-value (sig) of the test is more than 0.05, the null hypothesis cannot be ignored and discarded; thus, it is safe to assume that the variable that has gone through the analysis and can pose as a barrier. On the contrary, if the p-value of the binomial test is under 0.05, the null hypothesis is discarded. In this situation, if the percentage of the responses above is more than the ones below 4, the variable is realized to be a barrier. In regards with “open question”, it was composed to dismiss obstacles that might have skipped other people’s notice or the ones which depended on the country or its cultural elements. Taking this into consideration, the gathered responses were categorized in the sub-sets of “other barriers”. In order to depict the significance of each variable, frequency analysis was done.

### 10.3 Perceieved of use

Descriptive analysis was done based on data gathered about perceived ease of use to particularize the common variables’ statistics. The outcome of the analysis is as shown in the Table 2. Based on the result of the descriptive analysis, 5.85 can be considered as average perceived ease of use, that is greater than the midpoint of Likert 7-point scale, 4. Besides, the standard deviation of this variable is 1.28. Based on the collation between standard mean (5.85) and 5% trimmed means (5.94), no significant outlier exists in the data. Since Skewness and kurtosis are (-1.115) and (0.125) respectively, there is no significant departure from normality because they are between +2 and -2. More analysis is required to examine the normality assumption exactly.

Based on the normality’s assumption, the Kolmogorov-Smirnov statistics and Shapiro-Wilk were examined in Table 3. P-values of the Kolmogorov-Smirnov

**Table 2.** Descriptive analysis - perceived ease of use

	Kolmogorov-smirnov			Shapiro-wilk		
	statistic	df	sig	statistic	df	sig.
perceived ease of use	0.32	128	0	0.775	128	0

**Table 3.** P-values – perceived ease of use

		Statistic	Std. Error
perceived ease of use	Mean	5.85	0.158
	95% confidence Interval for	Lower Bound	5.53
	Mean	Upper Bound	6.16
	5% Trimmed Mean		5.94
	Median		6
	Variance		1.638
	Std Deviation		1.28
	Minimum		3
	Maximum		7
	Range		4
	Interquartile Range		1
	Skewness	-1.115	0.295
	Kurtosis	0.125	0.582

as well as Shapiro-Wilk are less than 0.05. This shows that there is a deviation from normality. As discussed in the part named as introduction to the analysis, when there is departure from normality, the nonparametric test or in other words binomial test should be performed because the parametric test which is the one-sample t-test is not appropriate.

Table 4 shows that the outcome of binomial test of perceived ease of use with midpoint of 7-point Likert scale, 4, is illustrated. The null hypothesis regarding the binomial test is as follows “50 percent of respondents consented that perceived ease of use is a barrier, this response was with the score of more than 4, while other 50 %didn’t consent that confidentiality is a barrier; these respondents answered to score of less than 4”. Above output reveals that the score of perceived ease of use was grouped in to <=4 and >4. 80 percent of perceived ease of use outcome is greater than 4 while 20 percent are less than this amount. Based on the rejection of null hypothesis and due to the fact that 80 percent of respondents regarded

**Table 4.** Binomial test of perceived ease of use

	Category	N	Observed Prop.	Test Prop.	Asymp. Sig. (2-tailed)
perceived Group 1	<=4	26	0.2	0.5	0 <sup>2</sup>
case of use Group 2	>4	106	0.8		
Total		132	1		

a. Based on Z Approximation.

perceived ease of use as a barrier and obstacle while 20 percent of them didn't perceive confidentiality as a barrier and obstacle, and the percentage of those who regarded perceived ease of use as an obstacle are greater than those who didn't regard confidentiality as a barrier, so there is enough claim and proof to deduce that perceived ease of use is a barrier as recognized by citizen of Iran.

### 10.4 Technology Acceptance

Descriptive analysis was done based on data gathered about technology acceptance to particularize the common variables' statistics. The outcome of the analysis is as shown in the Table 5. Based on the result of descriptive analysis, 5.62 can be considered as average technology acceptance, which is greater than the midpoint of Likert 7-point scale, 4. Besides, the standard deviation of this variable is 1.36. Based on the collation between standard mean (5.625) and 5% reduced means (5.695), no significant outlier exists in the data. Since Skewness and kurtosis are (-0.84) and (-0.60) respectively, there is no significant departure from normality because they are between +2 and -2.

Table 7 shows that the outcome of binomial test of technology acceptance with midpoint of 7-point Likert scale, 4, is illustrated. The null hypothesis regarding the binomial test is as follows, "50 percent of respondents consented that acceptance of technology is a barrier; these responses were with the score of more than 4, while the other 50% didn't consent that usability is a barrier; these respondents answered to score of less than 4". Above output reveals that the score of acceptance of technology was grouped in to <=4 and >4. 74 percent of acceptance of technology outcome is greater than 4 while 26 percent are less than this amount. Based on the rejection of the null hypothesis and due to the fact that 74 percent of respondents regarded acceptance of technology as an obstacle

**Table 5.** Descriptive analysis – technology acceptance

		Statistic	Std. Error
Technology acceptance	Mean	5.62	0.167
	95% confidence Interval for	Lower Bound	5.29
	Mean	Upper Bound	5.95
	5% Trimmed Mean		5.69
	Median		6
	Variance		1.839
	Std Deviation		1.356
	Minimum		3
	Maximum		7
	Range		4
	Interquartile Range		3
	Skewness	-0.837	0.295
	Kurtosis	-0.602	0.582

**Table 6.** P-value – technology acceptance

	Kolmogorov-smirnov			Shapiro-wilk		
	statistic	df	sig.	statistic	df	sig.
technology acceptance	0.322	128	0	0.804	128	0

**Table 7.** Binomial test of technology acceptance

	Category	N	Observed Prop.	Test Prop.	Asymp. Sig. (2-tailed)
perceived Group 1	<=4	34	0.26	0.5	0 <sup>2</sup>
case of use Group 2	>4	98	0.74		
Total		132	1		

a. Based on Z Approximation.

while 26 percent of them didn't consider easy to use as a barrier and obstacle so those who regarded acceptance of technology as an obstacle are more than those who didn't consider easy to use as a barrier; there is enough claim and proof to deduce that perceived acceptance of technology is a barrier as recognized by citizens of Iran.

### 10.5 Trust Worthiness

Descriptive analysis was done based on data gathered about trustworthiness of relevant services to particularize the common variables' statistics. The outcome of the analysis is as shown in the Table 8. Based on the result of descriptive analysis, 5.32 can be considered as average trustworthiness, which is greater than the midpoint of Likert 7-point scale, 4. Besides, the standard deviation of this variable is 1.49. Based on the collation between standard mean (5.32) and 5% reduced means (5.35), no significant outlier exists in the data. Since Skewness and kurtosis are (-0.40) and (-1.34) respectively, there are no significant departure from normality because they are between +2 and -2. More analysis is required to examine the normality assumption exactly.

Based on the normality's assumption, examined in Table 9. P-values of the Kolmogorov-Smirnov as well as Shapiro-Wilk are less than 0.05. This shows that there is a deviation from normality. As discussed in the part named as introduction to the analysis, when there is departure from normality, the nonparametric test or in other words binomial test should be performed because the parametric test using the one-sample t-test is not appropriate.

Table 10 shows that the outcome of binomial test of trustworthiness with midpoint of 7-point Likert scale, 4, is illustrated. The null hypothesis regarding the binomial test is as follows, "50 percent of respondents consented that trust is a barrier, these responses were with the score of more than 4, while other 50% didn't consented that reliability is a barrier; these respondents answered to a score of less than 4". Based on the outcome the p-value = 0.019 which is less than  $Z = 0.05$ , so the null hypothesis is rejected. Above output reveals that the score of trustworthy was grouped in to  $\leq 4$  and  $>4$ . 65 percent of trustworthy outcome is greater than 4 while 35 percent are less than this amount. Based on the rejection of the null hypothesis and due to the fact that 65 percent of respondents regarded trustworthy as an obstacle while 35 percent of them didn't consider reliability as a barrier and obstacle so those who regarded trustworthy as an obstacle are more than those who didn't consider reliability as a barrier; there is enough claim and proof to deduce that trustworthy is a barrier as recognized by citizens of Iran.

### 10.6 Coordination

The outcome of the analysis is as shown in the Table 11. Based on the result of descriptive analysis, 5.29 can be

**Table 8.** Descriptive analysis – trustworthiness

		Statistic	Std. Error
Trustworthiness	Mean	5.32	0.183
	95% confidence Interval for	Lower Bound	5.95
	Mean	Upper Bound	5.68
	5% Trimmed Mean		5.35
	Median		6
	Variance		2.22
	Std Deviation		1.49
	Minimum		3
	Maximum		7
	Range		4
	Interquartile Range		3
	Skewness	-0.397	0.295
	Kurtosis	-1.336	0.582

**Table 9.** P-value – trustworthiness

	Kolmogorov-smirnov			Shapiro-wilk		
	statistic	df	sig	statistic	df	sig.
trustwoithiness	0.252	128	0	0.843	128	0

**Table 10.** Binomial test of trustworthiness

	Category	N	Observed Prop.	Test Prop.	Asymp. Sig. (2-tailed)
trustworthiness Group 1	$\leq 4$	46	0.35	0.5	0.019 <sup>2</sup>
case of use Group 2	$>4$	86	0.65		
Total		132	1		

a. Based on Z Approximation.

considered as the coordination in the development and application average barrier, which is higher than the midpoint of Likert 7-point scale, 4. Besides, the standard deviation of this variable is 1.29. Based on the collation between standard mean (5.29) and 5% reduced means (5.32), no significant outlier exists in the data. Since Skewness and kurtosis are (-0.52) and (-1.03) respectively, there are no significant departure from normality because they are between +2 and -2.

**Table 11.** Descriptive analysis–coordination

		Statistic	Std. Error
Coordination	Mean	5.29	0.158
	95% confidence Interval for Lower Bound	5.97	
	Mean Upper Bound	5.6	
	5% Trimmed Mean	5.32	
	Median	6	
	Variance	1.654	
	Std Deviation	1.288	
	Minimum	3	
	Maximum	7	
	Range	4	
	Interquartille Range	2	
	Skewness	-0.518	0.295
	Kurtosis	-1.029	0.582

Table 12 shows that the outcome of the binomial test of the coordination in the development and application with midpoint of 7-point Likert scale, 4, is illustrated. The null hypothesis regarding the binomial test is as follows, “50 percent of respondents consented that coordination in the development and application is a barrier; these responses were with the score of more than 4, while the other 50% didn’t consent that coordination in the development and application is a barrier; these respondents answered to a result of less than 4”. Based on the outcome of the analysis, the p-value = 0.009 which is less than  $Z = 0.05$ , so the null hypothesis is rejected. Above output reveals that the score of coordination in the development and application was grouped in to  $\leq 4$  and  $> 4$ . 67 percent of coordination and application development outcomes are greater than 4 while 33 percent are less than this amount.

### 10.7 Uncertainty Avoidance- Culture

Descriptive analysis was done based on data gathered about Uncertainty avoidance-Culture to particularize the common variables’ statistics. The outcome of the analysis is as shown in the Table 13. Based on the result of descriptive analysis, 4.68 can be considered as average uncertainty avoidance - culture, which is greater than the midpoint

**Table 12.** P-value-coordination

	Kolmogorov-smirnov			Shapiro-wilk		
	statistic	df	sig.	statistic	df	sig.
coordination	0.316	128	0	0.838	128	0

**Table 13.** Binomial test of the coordination

		Category	N	Observed Prop.	Test Prop.	Asymp. Sig. (2-tailed)
coodination	Group 1	$\leq 4$	44	0.33	0.5	0.009 <sup>2</sup>
case of use	Group 2	$> 4$	88	0.67		
Total			132	1		

a. Based on Z Approximation.

of Likert 7-point scale, 4. Besides, the standard deviation of this variable is 1.35. Based on the collation between standard mean (4.68) and 5% reduced means (4.71), no significant outlier exists in the data. Since Skewness and kurtosis are (-0.245) and (-0.923) respectively, there are no significant departure from normality because they are between +2 and -2. More analysis is required to examine the normality assumption exactly in Table 14.

Based on the normality’s assumption, the Kolmogorov-Smirnov statistics and Shapiro-Wilk were examined in Table 15. P-values of the Kolmogorov-Smirnov as well as Shapiro-Wilk are less than 0.05. This shows that there is a deviation from normality. As discussed in the part named as introduction to the analysis, when there is departure from normality, the nonparametric test or in other words binomial test should be performed because the parametric test which is the one-sample t-test is not appropriate.

Table 16 shows that the outcome of binomial test of uncertainty avoidance - culture with midpoint of 7-point Likert scale, 4, is illustrated. The null hypothesis regarding the binomial test is as follows, “50 percent of respondents consented that uncertainty avoidance - culture is a barrier; these responses were with the score of more than 4, while the other 50 % didn’t consent that security is a barrier; these respondents answered to result less than 4”. Based on the outcome of the analysis, the p-value = 0.902 which is greater than  $Z = 0.05$ , so the null hypothesis might not be accepted. Above output reveal that the score of uncertainty avoidance - culture was grouped in to  $\leq 4$  and  $> 4.52$  percent of uncertainty avoidance-culture outcomes are greater than 4 while 48 percent are less than this

**Table 14.** Descriptive analysis – uncertainty avoidance

		Statistic	Std. Error
Uncertainty avoidance	Mean	4.68	0.166
	95% confidence Interval for	Lower Bound	4.35
	Mean	Upper Bound	5.01
	5% Trimmed Mean		4.71
	Median		5
	Variance		1.82
	Std Deviation		1.349
	Minimum		2
	Maximum		7
	Range		5
	Interquartile Range		2
	Skewness	-0.245	0.295
	Kurtosis	-0.923	0.582

**Table 15.** P-value – uncertainty avoidance

	Category	N	Observed Prop.	Test Prop.	Asymp. Sig. (2-tailed)
uncertainty avoidance	Group 1	<=4	64	0.48	0.902 <sup>2</sup>
	Group 2	>4	68	0.52	
	Total		132	1	

a. Based on Z Approximation.

**Table 16.** Binomial test of uncertainty avoidance

	Kolmogorov-smirnov			Shapiro-wilk		
	statistic	df	sig.	statistic	df	sig.
uncertainty avoidance	0.215	128	0	0.904	128	0

amount. Since the null hypothesis was not rejected and due to the fact that 52 percent of respondents regarded uncertainty avoidance-culture as a barrier and obstacle while 48 percent of them didn't consider security as an obstacle and the percentage of those who regarded uncertainty avoidance-culture as a barrier and obstacle are not

higher than the percentage of those who didn't consider security as an obstacle so there is not enough claim and proof to deduce that uncertainty avoidance-culture is a barrier as recognized by citizens of Iran.

### 10.8 Compatibility

Descriptive analysis was done based on data gathered about compatibility to particularize the common variable's statistic. The outcome of the analysis is as shown in the Table 17.

Based on the result of descriptive analysis, 5.17 can be considered as average barrier of the compatibility, which is greater than the midpoint of Likert 7-point scale, 4. Besides, the standard deviation of this variable is 1.64. Based on the collation between standard mean (5.17) and 5% reduced means (5.22), no significant outlier exists in the data. Since Skewness and kurtosis are (-0.32) and (-1.44) respectively, there are no significant departure from normality because they are between +2 and -2.

Based on the normality's were examined in Table 18. P-values of the Kolmogorov-Smirnov as well as Shapiro-Wilk are less than 0.05. This shows that there is a deviation from normality. As discussed in the part named as introduction to the analysis, when there is departure from normality, the nonparametric test or in other words binomial test should be performed because the parametric test which is the one-sample t-test is not appropriate.

Table 19 shows that the outcome of binomial test of compatibility with midpoint of 7-point Likert scale, 4, is illustrated. The null hypothesis regarding the binomial test is as follows, "50 percent of respondents consented that compatibility is a barrier, this response were with the score of more than 4, while other 50% didn't consented that visually attractive is a barrier; these respondents answered to score less than 4. Above output reveal which the score of compatibility was grouped in to <=4 and >4. 58 percent of compatibility outcome are greater than 4 while 42 percent are less than this amount. The null hypothesis could be accepted due to the fact that 58 percent of respondents regarded compatibility as a barrier and obstacle while 42% of them didn't perceived visual attractive as a barrier and obstacle and the percentage of those who regarded

**Table 17.** Descriptive analysis – compatibility

	Kolmogorov-smirnov			Shapiro-wilk		
	statistic	df	sig.	statistic	df	sig.
compatibility	0.255	128	0	0.845	128	0

**Table 18.** P-value – compatibility

		Statistic	Std. Error
Compatibility	Mean	4.68	0.202
	95% confidence Interval for Lower Bound	4.67	
	Mean Upper Bound	5.57	
	5% Trimmed Mean	4.22	
	Median	6	
	Variance	2.695	
	Std Deviation	1.642	
	Minimum	2	
	Maximum	7	
	Range	5	
	Interquartile Range	3	
	Skewness	-0.319	0.295
	Kurtosis	-1.436	0.582

**Table 19.** Binomial test of compatibility

	Category	N	Observed Prop.	Test Prop.	Asymp. Sig. (2-tailed)
compatibility Group 1	<=4	56	0.42	0.5	0.268 <sup>2</sup>
Group 2	>4	76	0.58		
Total		132	1		

a. Based on Z Approximation.

compatibility as a barrier and obstacle are not higher than the percentage of those who didn't regard visual attractive as a barrier, so there is not enough claim and proof to deduce that compatibility is a barrier as recognized by citizens of Iran.

### 10.9 Implications

In order to find the best method for analyzing, the normality supposition and assumptions for all of the barriers, advantages and merits were verified. Consequently, it was decided to analyze the binomial using a non-parametric method for the purpose of examining the assumptions. Applying Binomial analyzing for the six barriers that were

pulled out from the relative literature (perceived ease of use, acceptance of technology, reliability, coordination of uncertainty avoidance, and compatibility) indicated that only four of them (perceived ease of acceptance of technology use, reliability, coordination) could be considered as obstacles for Iran's citizens in adopting the e-government.

## 11. Recommendation

Regarding the results of the analysis, it was realized that among the six potential obstacles in adopting e-government, the four hindrances (coordination in the development and application, trustworthiness, Technology acceptance, perceived ease of use) exist in Iran such that it is perceived by citizens. Moreover, besides the previously mentioned obstacles, two more (uncertainty avoidance and compatibility) were identified by the respondents. A fact that can't be denied is that the best way to elevate how e-government performs is for the government officials to remove these obstacles. Thus, the authorities in Iranian government have to carry out the removal and elimination or minimizing of the identified obstacles that were particularly determined by Iran's citizens.

## 12. Conclusion

Shifting from a government to the system of an e-government seems like an unavoidable decision for many countries and their government around the world. Just like the effect of electronic commerce on the international market with its rapid growth during the past decade, the development of e-government's influence is also inevitable. This growth is also associated with emphasis put upon the new public management policies. According to this view point, focusing on the citizens is the most important task and the citizens should be considered as clients by the government officials. Creating an excellent system of e-government that excels in both formulation and the effectiveness and efficiency of application, which is what a government should do, should be united and joined with the citizens' willingness to use. Stated that the removal of obstacles and the improvement of beneficial points (the way citizens perceive it) are directly and significantly related to the degree of the citizen's willingness to use. Thus, in order to help the e-government to perform better, governments should first try to remove barriers and perceived benefits through scientific

research, and to remove barriers and promote benefits. This descriptive research has attempted to remove the obstacles and benefits of the adoption of e-government, in accordance with Iranian citizens' perception. The result of the analysis showed that many of the barriers (4 of 6, meaning that 67.7%) which were reported in previously mentioned literatures existed in Iran's e-government. Therefore, Iranian government authorities should pay considerable attention to developing an adequate plan to eliminate perceived barriers.

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