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ENJOYMENT OF E-GOVERNMENT SERVICES BY DIFFERENT SOCIO-DEMOGRAPHIC GROUPS: THE CASE OF ESKISEHIR/TURKEY[1]

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KEYWORDS

E-government, the efficiency of the use of e-government services and information and communication technologies, data envelopment analysis.

ABSTRACT

This study was carried out to investigate vocational, social and economic characteristics of different socio-demographic groups in Eskisehir, the patterns of use of information and communication technologies and the internet, enjoyment of e-government services, use of e-government services and the share of e-government services among the use of information and communication technologies and the internet. The efficiency of the use of e-government services by different socio-demographic groups in Eskisehir province has been examined through data envelopment analysis. Efficiency scores of individuals from groups that are covered by the study with respect to the use of the internet and efficiency scores for each group with respect to the average use of the internet have been calculated.

1. INTRODUCTION

Economies are increasingly transformed into “e-economies” through economic and social impacts of information and communication technologies which shorten social and cultural distances on a global scale and provide opportunities for political participation, democratic governance, fast and effective connection between individual units and participatory governance. A “cyber culture” has emerged with respect to life styles, social relations and leisure time preferences, from the social perspective. The use of information and communication technologies is important for improving the social aspect of information economy, but using such technologies effectively is more important. This study examines the efficiency of the use of e-government services that are provided by the public sector, require significant infrastructure expenditures and consume public resources.The fact that advances in information and communication technologies are made in developed countries that have better physical and technological infrastructure capabilities create opportunity gaps for developing countries. Everyone living in the world is required to have access to information and communication technologies and use these technologies effectively in order to eliminate such opportunity gaps. This is because access to information gives significant competitive edge (OECD, 2003).

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E-government services representing one of the most common fields of application of Information and communication technologies and the internet, which is the concrete embodiment of these technologies, may be summarized as use of information and communication technologies in government services and use of new technologies by public servants. Information and communication technologies and the internet have a wide range of application with respect to e-government services as they have in all other fields (Jansen, 2005). In this study, the e-government concept is examined with respect to the link between the citizens and the government. As a matter of fact, this study analyses the e-government services used by the citizens rather than the information and communication technologies that are actually provided, in other words current and potential users are analyzed. There are numerous studies analyzing the e-government services that are provided through various public web sites. However, there is relatively less number of studies addressing the target audience of these services. Moreover, it is a known fact that socio-economic and cultural differences have a close impact on the use of information and communication technologies. This study aims at analyzing the e-citizen concept by examining enjoyment of e-government services by different socio-demographic groups in Eskisehir province.

Since enjoyment of e-government, e-health and e-education services by all segments of the society effectively with respect to advances regarding information and communication technologies as well as e-commerce and e-business opportunities requires physical and human infrastructure, possession of such technologies is analyzed in the first place.

Secondly, effective use of the e-government services, which has become widespread today, by individuals, is analyzed. Effective use that is expressed by the level of education and computer literacy of citizens is analyzed at this stage. Thirdly, the level of use by different socio-demographic groups is analyzed.

2. DEVELOPMENTS IN TURKEY IN THE FIELD OF E-GOVERNMENT

Previous research has demonstrated that the level of enjoyment from e-government services was low (Arifoğlu et al., 2002: 12). It is beyond doubt that the most important reason for this is the internet which continues to be the most significant technological invention in the 21st Century with different types of digital divide for different population groups. In other words, it is the inequality in accessibility to information and communication technologies. Numerous factors such as online skills, socio-economic status, education, culture, age and area of residence also play an important role in having these different types of digital divide, as well as internet access (Latimer, 2009: 1025).

Studies were initiated in Turkey in the early 1990s for the effective use of information and communication technologies in the public administration. The computer and internet infrastructure was started to be established in public institutions and computer aided training programs were more emphasized. The Lisbon Summit held by the European Union in 2000 was a milestone also for Turkey. Steps were taken at the Lisbon Summit to establish an information based economy at the European Union Level. Important steps were also taken in Turkey from the year 2000 onwards, with respect to e-Turkey Action Plan, e-Transformation Turkey Project and Information Society Strategy, E-government (SPO, 2005). The Information Society Strategy published in 2006 comprises 111 actions. Large-scale e-government projects were implemented such as MERNİS, National Judicial Network (UYAP), e-Customs, SOYBİS and e-Health.

When the information and communication infrastructure provided by the public sector, utility services supplied by various public institutions and the personnel used for generating these services are taken into account, it is seen that a significant amount of service is supplied in the aggregate. Since this structure is very strong with respect to supply of information and communication technologies, the demand for information and communication technologies is also very important. Citizens who are going to use the services that are provided should be e-citizens in order to enter into transactions with the e-government, creating an effective demand for information and communication services. Citizens are obliged to obtain passwords to use various e-government services. However obtaining passwords alone is not enough, because in order to be defined as an e-citizen, an individual is required to follow up on his/her e-government transactions and to use the technology effectively. There is 12,237,805 individuals registered with the e-government system at "Türkiye.gov.tr" as of the year 2012. However, the actual number of e-citizens is well below this figure (www.turkiye.gov.tr)[3].

3 ENJOYMENT OF E-GOVERNMENT SERVICES BY DIFFERENT SOCIO DEMOGRAPHIC GROUPS IN ESKİSEHIR PROVINCE

In this study, different socio-demographic groups are defined as women, seniors, youth and disabled people who represent social segments facing difficulties in accessing labor markets, working and seeking jobs, as well as the risk of social exclusion.

3.1. The Objective of the Study

The overall objective of this study is to assess the efficiency of the use of e-government services through the questionnaire that was developed for this purpose and to determine the level of use of the e-government services by the disabled, seniors, youth and women as well as the efficiency of such use. The questionnaire that was developed for this overall objective seeks the answers to the following questions:

- What are the vocational, social and economic characteristics of the disabled, seniors, youth and women in Eskisehir province?
- What are the patterns of use of information and communication technologies and the internet by the disabled, seniors, youth and women in Eskisehir province?
- Is there any difference between the disabled, seniors, youth and women in Eskisehir province with respect to the level of enjoyment of e-government services by these groups?
- Is there any difference between the disabled, seniors, youth and women in Eskisehir province with respect to the level of use of e-government services by these groups?
- What is the share of e-government services among the use of information and communication technologies and the internet by the disabled, seniors, youth and women in Eskisehir province?
- What is the level of efficiency of the use of information and communication technologies and the internet by the disabled, seniors, youth and women in Eskisehir province?

[2]http://www.turkiye.gov.tr
[3]http://www.turkiye.gov.tr

3.2. Assumptions and Limitations of the Study

This study is based on the following assumptions;

- There are differences among citizens in Eskisehir province with respect toaccessibility to information and communication technologies,
- The differences among citizens in Eskisehir province with respect to accessibility to information and communication technologies is more significant between the disabled, seniors, youth and women,
- The disabled, seniors, youth and women who are included in the study will be highly motivated to respond to the survey questionnaire.

The limitations of the study are as follows:

- This study is limited to the disabled, seniors, youth and women who are included in the study,
- This study is limited to the statements included in the questionnaire developed for the purpose of assessing the efficiency of the use of e-government services and the efficiency of the use of information and communication technologies and the internet by the disabled, seniors, youth and women in Eskisehir province,
- This study is limited to the answers given to the questionnaire by the disabled, seniors, youth and women who are included in the scope of the study.

3.3. Definition of Different Socio-Demographic Groups for the Purposes of This Study

Due to the difficulty in segregating different socio-demographic groups, the primary group to which the individual belongs is taken as the basis. For example, a disabled and senior woman is included in the disabled category for the purposes of this study.

3.3.1. The Disabled

Persons who are deprived of the possibility to participate in the social life or to find and keep a job in part or in whole compared to other individuals in the same community are referred to as the handicapped and the segment of the society comprising these persons are called handicapped groups. Immigrants, homosexuals, unmarried parents, those with different ethnic backgrounds and the disabled are included in the handicapped group as individuals who face serious integration problems in all areas of social life, compared to other individuals, for the purposes of this study. “Disabled” on the other hand is a concept used to describe persons whose capabilities are reduced to a certain extent due to their handicaps.

3.3.2. Seniors

Seniors are classified under three groups as generally accepted in the literature. The first group comprises economically active "senior workers" between the ages of 55 and 64 and the second group comprises economically non-active "elderly persons" between the ages of 65 and 74. The third group comprises "very old persons" at the age of 80 or over (Özgüler, 2006: 72). Individuals at or over the age of 50 are considered as senior workers for the purposes of this study. This is because, persons at or over the age of 50 are considered as senior workers under the labor legislation in Turkey. Consequently, although the above-mentioned classification also applies for Turkey, it is seen that the lower age limit for the senior workers group has been reduced from 55 to 50.

3.3.3. Youth

Individuals complete their education and seek regular employment opportunities and the possibility to start a family during the period of transition to adulthood. The period between 16-19 years of age is defined as youth and the period between 25-29 years of age is defined as older youth. Individuals at or under 25 years of age are considered as youth for the purposes of this study.

3.3.4. Women

Women are generally employed for jobs requiring a low level of skills such as operating word processors or entering data with respect to new gender related tasks that are generated through information and communication technologies. Women are required to be educated in order to be employed for jobs paying more and requiring higher technical knowledge and creativeness (Technology, 2003: 9). This study has also revealed that the efficiency of women in using information and communication technologies and e-government services is low.

3.4. Method and Materials

In the present study conducted by using a comparative relational screening model, the study group was selected from Eskisehir province where internet access is highly available, for convenience purposes. Data were collected through "Attitude Scale for E-government Services" (ASEGS). 33 items were created when developing the scale and total correlation coefficients were calculated for these items (Lee and Comrey, 1979). SPSS 15.00 statistical package program was used for analyzing the data collected from the disabled, seniors, youth and women.

The major efficiency criterion in Data Envelopment Analysis (DEA) is the figure obtained by dividing weighted total of outputs by the weighted total of inputs. The main distinctive feature of Data Envelopment Analysis compared to other methods that are used for similar purposes is that it allows for assessment in cases with a multiple inputs and outputs (Cooper, 2000).

It is possible to create numerous Data Envelopment Analysis models depending on the fields of use and assumptions. The model to be selected or created depends on whether the inputs and outputs are controllable or not. If there is limited (or no) control on the inputs then an output-oriented model must be created; and if there is limited control on the outputs then an input-oriented model must be created. If no orientation can be made under the circumstances, it will be a good idea to use additive models.

An input-oriented model is used for the efficiency analysis that is carried out to determine whether the disabled, senior, youth and women groups use information technologies efficiently. The input variables for individuals constituting the decision-making units in the model are age and income, and the output variable is the number of years of internet use.

The efficiency score for each decision-making unit in the input-oriented DEA that is used in the present study is calculated by using the following mathematical model:

$$\max \theta_j(u,v) = \frac{\sum_{r=1}^{s} u_r y_{rj}}{\sum_{i=1}^{m} v_i x_{ij}}$$

$$\max \theta_j(u,v) = \frac{\sum_{r=1}^{s} u_r y_{rj}}{\sum_{i=1}^{m} v_i x_{ij}} \leq 1, \quad j = 1,2,...,n$$

$$u_r \geq 0, r = 1,2,...,s$$

$$v_i \geq 0, i = 1,2,...,m$$

In this model;

x_{ij} = input i used by decision-making unit j (i = 1,2,…,m and j = 1,2,…,n) and

y_{rj} = output r used by decision-making unit j (r = 1,2,…,s and j = 1,2,…,n).

Efficiency coefficient Θ shall always be equal to or less than one. If the efficiency coefficient is equal to one, the decision-making unit is relatively efficient; and if it is less than one, the decision-making unit is not efficient.

3.5. Population and Sample

This study conducted to assess the efficiency of the use of e-government services covers the disabled, seniors, women and the youth. The present study was not carried out by defining a population and taking samples from that population. The objective of this survey requires the study to be conducted in a province with high accessibility to the internet. Thus, it was decided to conduct the study in Eskisehir province where accessibility to the internet is high. Convenience of application was also decisive in selecting the study group from Eskisehir province, in addition to high accessibility to the internet. The study group comprises 801 individuals from the disabled, senior, women and youth groups, between the ages of 16 and 74, who were actually living in Eskisehir province in 2010, in accordance with the age group classification of the samples used for the "Household Use of Information Technology Survey" prepared by the Turkish Statistical Institute (TUIK) regardless of the group they are in, and the number of individuals in each group is

provided here below (TÜİK, 2009). There were 101 individuals in the disabled group, 91 individuals in the seniors group, 304 individuals in the women's group and 305 individuals in the youth group in Eskisehir province, all between the ages of 16 and 74. 23 questionnaires were not taken into evaluation since they were not completed in accordance with the instructions. 2 of the 23 questionnaires which were not taken into evaluation were completed by disabled persons, 2 were completed by seniors, 13 were completed by women and 6 were completed by young individuals. Accordingly, data collected from 778 of a total of 801 questionnaires were included in the analysis. Data collected from 584 individuals, who provided full data regarding age, income and the number of years of internet use were used for calculating efficiency scores in data envelopment analysis. 42 of these 584 individuals are disabled, 89 are seniors, 243 are young individuals and 210 are women.

3.6. Findings of the Study

Findings regarding vocational, social and economic characteristics of different socio-demographic groups, the patterns of use of information and communication technologies and the internet, enjoyment of e-government services, use of e-government services and the share of e-government services among the use of information and communication technologies and the internet, their attitude towards e-government services and the group to which this attitude belongs, level of education, perceived economic well-being, internet accessibility, the mode of enjoyment of e-government services and whether the mode of enjoyment of e-government services differ depending on their habit of visiting web sites of public institutions are provided in this section.

Table 1:Group and Gender Distribution of the Disabled, Seniors, Youth and Women who are Included in the Study

Variable	**Disabled**		**Seniors**		**Women**		**Youth**		**Total**	
Gender	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1) Female	50	56.2	17	17.2	291	100	103	34.4	459	59
2) Male	39	43.8	82	82.8	-	-	196	65.6	319	41
Total	**89**	**100**	**99**	**100**	**291**	**100**	**299**	**100**	**778**	**100**

The gender distribution of the disabled, seniors, youth and women who are included in the study is provided in Table 1. The age distribution of the disabled, seniors, youth and women who are included in the study is provided in Table 2.

Table 2:Age Distribution of the Disabled, Seniors, Youth and Women who are Included in the Study

Variable	**Disabled**		**Seniors**		**Women**		**Youth**		**Total**	
Age	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1) Under 25 years	47	52.8	-	-	158	54.0	299	100	504	64.7
2) Between 26 and 35 years	21	23.5	-	-	59	20.2	-	-	80	10.2
3) Between 36 and 45 years	17	19.1	-	-	54	18.5	-	-	71	9.1
4) Between 46 and 49 years	3	3.3	-	-	19	6.5	-	-	22	2.8
5) 50 years or older	-	-	99	100	-	-	-	-	99	12.7
6) No reply	1	1.1	-	-	1	0.3	-	-	2	0.2
Total	**89**	**100**	**99**	**100**	**291**	**100**	**299**	**100**	**778**	**100**

Vocational distribution of the disabled, seniors, youth and women who are included in the study is provided in Table 3.

Table 3:Vocational Distribution of the Disabled, Seniors, Youth and Women who are Included in the Study

Variable	**Disabled**		**Seniors**		**Women**		**Youth**		**Total**	
Vocation	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1) Worker	18	20.2	5	5.0	21	5.4	14	4.5	58	7.2
2) Public servant	8	9.0	4.6	46.4	24	8.2	11	3.7	89	11.4
3) Self employed	1	1.1	10	10.1	163	56.0	13	4.3	187	24.0
4) Artisan	1	1.1	18	18.2	1	0.3	60	20.0	80	10.2
5) Student	41	46.1	-	-	57	19.6	188	62.9	286	36.8
6) Housewife	8	9.0	1	1.0	23	7.8	-	-	32	4.1
7) Unemployed	8	9.0	-	-	-	-	-	-	8	1.0
8) Pensioner	2	2.2	19	19.2	-	-	-	-	21	2.7
9) No reply	2	2.2	-	-	2	0.7	13	4.3	17	2.2
Total	**89**	**100**	**99**	**100**	**291**	**100**	**299**	**100**	**778**	**100**

The distribution of the disabled, seniors, youth and women who are included in the study with respect to their educational level is provided in Table 4.

Table 4:The Distribution of the Disabled, Seniors, Youth and Women who are Included in the Study with respect to their Educational Level

Variable	**Disabled**		**Seniors**		**Women**		**Youth**		**Total**	
Educational Level	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1) Primary school	9	10.1	2	2.0	9	3.1	11	3.7	31	4.0
2) Secondary school	9	10.1	6	6.1	170	58.4	39	13.0	224	28.8
3) High school	44	49.4	33	33.3	7	2.4	207	69.2	291	37.4
4) University/College	24	27.0	49	49.5	92	31.6	30	10.0	105	13.5
5) Master Degree/Doctor's Degree	1	1.1	8	8.1	11	3.8	5	1.7	18	2.3
6) No Reply	2	2.2	1	1.0	2	0.7	7	2.3	12	1.5
Total	**89**	**100**	**99**	**100**	**291**	**100**	**299**	**100**	**778**	**100**

The distribution of the disabled, seniors, youth and women who are included in the study with respect to their perceived economic well-being is provided in Table 5.

Table 5:The Distribution of the Disabled, Seniors, Youth and Women who are Included in the Study with respect to their Perceived Economic Well Being

Variable	**Disabled**		**Seniors**		**Women**		**Youth**		**Total**	
Perceived Economic Well Being	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1) Very good	4	4.5	3	3.0	6	2.1	9	3.0	22	2.8
2) Good	26	29.2	39	39.4	87	29.9	102	34.1	254	32.6
3) Neither good nor poor	35	39.3	43	43.4	140	48.1	145	48.5	363	46.7
4) Poor	14	15.7	8	8.1	30	10.3	25	8.4	77	9.9
5) Very poor	5	5.6	3	3.0	20	6.9	12	4.0	40	5.1
6) No idea	2	2.2	-	-	4	1.4	4	1.3	10	1.3
7) No reply	3	3.4	3	3.0	4	1.4	2	0.7	12	1.5
Total	**89**	**100**	**99**	**100**	**291**	**100**	**299**	**100**	**778**	**100**

The distribution of the disabled, seniors, youth and women who are included in the study with respect to their experience with computers is provided in Table 6.

Table 6:The Distribution of the Disabled, Seniors, Youth and Women who are Included in the Study with respect to their Experience with Computers

Variable	**Disabled**		**Seniors**		**Women**		**Youth**		**Total**	
Experience with computers	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1) 1 year or less	4	4.5	-	-	1	0.3	1	0.3	6	0.7
2) 1-5 years	16	17.9	14	14.1	55	18.9	88	29.4	173	22.2
3) 6-10 years	44	49.4	45	45.4	148	50.8	145	48.4	382	49.1
4) 11-15 years	7	7.8	25	25.2	51	17.5	45	15.0	128	16.4
5) 16 years or more	3	3.3	9	9.1	13	4.4	4	1.3	29	3.7
6) No reply	15	16.8	6	6.0	23	7.9	16	5.3	60	7.7
Total	**89**	**100**	**99**	**100**	**291**	**100**	**299**	**100**	**778**	**100**

When the distribution of the disabled, seniors, youth and women who are included in the study with respect to their experience with computers is examined, it is seen that almost all of them (97.03%) have been using computers for more than "1" year and that the seniors are more experienced with computers compared to women and the youth in particular. The distribution of the disabled, seniors, youth and women who are included in the study with respect to their opinion on the necessity of using information and communication technologies and the internet is provided in Table 7.

Table 7:**The Distribution of the Disabled, Seniors, Youth and Women who are Included in the Study with respect to TheirOpinion on the Necessity of Using Information and Communication Technologies and the Internet**

Variable	**Disabled**		**Seniors**		**Women**		**Youth**		**Total**	
Opinion on the necessity of using information and communication technologies and the internet	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1) Using information and communication technologies and the internet makes life easier.	88	98.9	96	97.0	282	96.9	282	94.3	748	96.1
2) UsingInformation and communication technologies and the internet does not make life easier.	-	-	1	1.0	5	1.7	15	5.0	21	2.7
3) No reply	1	1.1	2	2.0	4	1.4	2	0.7	9	1.2
Total	**89**	**100**	**99**	**100**	**291**	**100**	**299**	**100**	**778**	**100**

All groups that are included in the study believe that using information and communication technologies and the internet is highly necessary. However, it can be said that, in comparison to the women and the youth, the disabled and the senior groups believe that using information and communication technologies and the internet is highly necessary. This attitude can be explained with the fact that the women and the youth have other possibilities to carry out their affairs apart from information and communication technologies and the internet compared to the disabled and seniors.

The distribution of the disabled, seniors, youth and women who are included in the study with respect to their accessibility to information and communication technologies and the internet is provided in Table 8.

Table 8: The Distribution of the Disabled, Seniors, Youth and Women who are Included in the Study with respect to theirAccessibility to Information and Communication Technologies and the Internet

Variable	**Disabled**		**Seniors**		**Women**		**Youth**		**Total**	
Accessibility to information and communication technologies and the internet	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1) Yes	14	15.7	95	96.0	228	78.4	221	73.9	619	79.6
2) No	75	84.3	3	3.0	59	20.3	77	25.8	153	19.7
Total	**89**	**100**	**99**	**100**	**291**	**100**	**299**	**100**	**778**	**100**

It is seen that the seniors have the highest accessibility to information and communication technologies and the internet compared to the other groups that are included in the study and the disabled have a dramatically low level of accessibility to information and communication technologies and the internet. This result suggests that policies to increase the accessibility of the disabled to information and communication technologies and the internet, in particular, should be implemented as soon as possible.

The distribution of the disabled, seniors, youth and women who are included in the study with respect to their place of access to the internet is provided in Table 9.

Table 9:The Distribution of the Disabled, Seniors, Youth and Women who are Included in the Study with respect to Their Place of Access to the Internet

Variable	**Disabled**		**Seniors**		**Women**		**Youth**		**Total**	
Place of access to the internet	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1) Home	75	84.3	96	97	232	79.7	222	74.2	625	80.3
2) Cyber cafe	2	2.2	-	-	23	7.9	34	11.4	59	7.6
3) School library	-	-	-	-	10	3.4	5	1.7	15	1.9
4) Business office	2	2.2	-	-	5	1.6	4	1.3	11	1.5
5) Friend's house	10	11.3	3	3.0	20	6.8	31	10.4	64	8.2
7) Neighbor's house	-	-	-	-	1	0.3	3	1	4	0.5
Total	**89**	**100**	**99**	**100**	**291**	**100**	**299**	**100**	**778**	**100**

The distribution of the disabled, seniors, youth and women who are included in the study with respect to their mode of enjoyment of e-government services is provided in Table 10.

Table 10: The Distribution of the Disabled, Seniors, Youth and Women who are Included in the Study with respect to Their Mode of Enjoyment of E-government Services

Variable	**Disabled**		**Seniors**		**Women**		**Youth**		**Total**	
The mode of enjoyment of e-government services	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1) Personally	47	52.8	90	90.9	194	66.7	219	73.2	550	70.7
2) Through others	36	40.4	7	7.1	73	25.1	64	21.4	180	23.1
3) No reply	6	6.7	2	2.0	24	8.2	16	5.4	48	6.2
Total	**89**	**100**	**99**	**100**	**291**	**100**	**299**	**100**	**778**	**100**

In order to determine how the disabled, seniors, youth and women who are included in the study carry out their affairs with public institutions, first of all, it has been checked whether they visit the web sites of public institutions. To this end, the distribution of these groups with respect to visiting or not visiting the web sites of public institutions is provided in Table 11.

Table 11: The Distribution of the Disabled, Seniors, Youth and Women who are Included in the Study with respect to Visiting or Not Visiting Web Sites of Public Institutions

Variable	**Disabled**		**Seniors**		**Women**		**Youth**		**Total**	
Visiting or not visiting Web Sites of Public Institutions	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1) Yes	55	61.8	91	91.9	217	74.6	218	72.9	581	74.7
2) No	31	34.8	7	7.1	67	23.0	78	26.1	183	23.5
3) No reply	3	3.4	1	1.0	7	2.4	3	1.0	14	1.8
Total	**89**	**100**	**99**	**100**	**291**	**100**	**299**	**100**	**778**	**100**

The results of the survey indicate that seniors visit the web sites of public institutions more frequently compared to other groups. The results of the survey also indicate that the disabled visit the web sites of public institutions less frequently compared to other groups.

The distribution of the groups that are included in the study with respect to their mode of carrying out their affairs with public institutions is provided in Table 12.

Table 12: The Distribution of the Disabled, Seniors, Youth and Women who are Included in the Study with respect to Their Mode of Carrying out Their Affairs with Public Institutions

Variable	**Disabled**		**Seniors**		**Women**		**Youth**		**Total**	
Mode of Carrying out Affairs with Public Institutions	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1) I visit the related Public Institution personally.	58	65.2	26	26.3	199	68.4	209	69.9	492	63.2
2) I carry out my affairs through the internet.	28	31.5	16	16.2	65	22.3	75	25.1	184	23.7
3) Other (both of the above)	3	3.4	53	53.5	17	5.8	12	4.0	83	10.5
4) No reply	-	-	4	4.0	10	3.4	3	1.0	20	2.6
Total	**89**	**100**	**99**	**100**	**291**	**100**	**299**	**100**	**778**	**100**

The public institutions whose web sites are visited by the disabled, seniors, youth and women who are included in the study are provided in Table 13.

Table 13: Public Institutions whose Web Sites are Visited by the Disabled, Seniors, Youth and Women who are Included in the Study

Public Institutions Whose Web Sites are Visited	
1) Ministry of National Education	**9)** General Directorate of State Meteorological Services
2) OSYM (Measurement, Selection and Placement Center)	**10)** State Owned Banks
3) Social Security Institution	**11)** Ministry of the Interior
4) General Directorate of Civil Registration and Nationality	**12)** Security Directorate
5) Ministry of Finance	**13)** Grand National Assembly of Turkey
6) Turkish Airlines	**14)** Turkish State Railways
7) General Directorate of Highways	**15)** Grand National Assembly of Turkey
8) Prime Ministry	**16)** Ministry of Labor and Social Security

The purposes of the disabled, seniors, youth and women who are included in the study for visiting web sites of public institutions are provided in Table 14.

Table 14: The Purposes of the Disabled, Seniors, Youth and Women who are Included in the Study for Visiting Web Sites of Public Institutions

Purposes for Visiting Web sites of Public Institutions
1) Following news and announcements
2) E-mail services
3) Seeking employment through employment agencies
4) Accessing the Constitution, Laws, Decree Laws etc.
5) Following the Official Gazette
6) Tax returns and assessments
7) Information services
8) Applying for examinations and inquiring results
9) Exercising citizenship rights under the Right to Information Act
10) Inquiring address-telephone information
11) Complaints and communicating problems
12) Making reservations and appointments
13) Exchanging information
14) Accessing art and culture activities such as movies, music etc.
15) Participating in debates and votings
16) Inquiring taxes or utilities payable
17) Inquiring information regarding tender requirements etc.
18) Paying taxes or utilities
19) Inquiring information regarding social security such as social security premiums
20) Paying social security premiums or carrying out other affairs related to social security
21) Inquiring demerit points
22) Paying traffic tickets
23) Inquiring motor vehicle data
24) Inquiring identity information and Republic of Turkey I.D. No. etc.
25) Inquiring addresses of the web sites or telephone numbers of central public offices
26) Enrolling in higher education institutions
27) Applying for passports
28) Applying for military service
29) Filing patent and trademark applications
30) Applying for education and tuition fee loans
31) Benefiting from other online services

It has been found out that the disabled, seniors, youth and women who are included in the study enjoy news, announcements and e-mail services the most among the above-mentioned services provided by public intuitions.

The factors affecting the use of e-government services by the disabled, seniors, youth and women who are included in the study are provided in Table 15.

Table 15: The Factors Affecting the Use of E-Government Services by the Disabled, Seniors, Youth and Women who are Included in the Study

The Factors Affecting the Use of E-Government Services
1) The content of the web site is not easily comprehensible
2) Related forms and instructions cannot be easily downloaded
3) No clear guidance to the web sites where the required services are provided
4) The links in the web site are dead or out of date
5) The web site does not provide the required information
6) Lack of trust in payment services in particular

The results of the survey indicate that elimination of the factors affecting the use of e-government services will lead to an increase in the rate of use of e-government services. Consequently, public institutions should exercise more care and attention to make sure that the content of the web sites are comprehensible and that the required information is communicated to the users, in order to increase the efficiency of the use of e-government services.

4. EFFICIENCY OF THE USE OF E-GOVERNMENT SERVICES

The efficiency of the use of e-government services by the disabled, seniors, youth and women who are included in the study is determined by Data envelopment Analysis (DEA).

Efficiency scores of the members of each group and the average efficiency score for each group regarding the use of the internet were calculated. Data collected from 584 individuals, who provided full data regarding age, income and the number of years of internet use, were used for calculating efficiency scores. 42 of these 584 individuals are disabled, 89 are seniors, 243 are young individuals and 210 are women. Table 16 provides the efficiency scores of the disabled who are included in the study regarding the use of the internet. 11 individuals from a total of 42 disabled individuals who have participated in the survey use the internet efficiently. The average efficiency score of the disabled group regarding the use of the internet is 78%.

Table 16: Efficiency Scores of the Disabled Regarding the Use of the Internet

Efficiency Scores of the Disabled Regarding the Use of the Internet				
1.00	1.00	0.53	0.48	0.63
1.00	0.98	0.74	1.00	0.70
1.00	0.81	0.38	0.44	
1.00	0.56	0.95	0.50	
0.52	0.73	1.00	0.43	
0.91	0.55	0.79	0.60	
0.87	0.77	0.73	1.00	
0.69	1.00	0.92	0.59	
0.99	0.95	1.00	1.00	
0.90	0.49	0.83	0.85	

Table 17 provides the efficiency scores of the seniors regarding the use of the internet. The average efficiency score of the senior group regarding the use of the internet is 92%.

Table 17: Efficiency Scores of the Seniors Regarding the Use of the Internet

Efficiency Scores of the Seniors Regarding the Use of the Internet				
0.89	0.93	0.75	0.97	0.87
0.92	0.92	0.97	0.91	0.87
0.89	0.97	0.99	0.87	0.84
0.94	0.96	0.92	0.98	0.92
0.83	0.96	0.93	1.00	0.88
0.86	0.96	1.00	0.92	0.96
0.95	1.00	1.00	0.98	0.90
0.97	0.96	0.99	0.92	0.92
0.99	1.00	0.89	0.93	0.87
0.94	0.99	0.90	0.90	1.00
0.85	0.89	0.89	0.94	0.88
1.00	0.97	0.73	0.92	0.86
0.94	0.96	0.95	0.89	0.87
0.88	0.97	0.95	0.86	0.88
0.99	0.86	0.95	0.90	0.89
0.97	0.90	0.81	0.90	0.89
0.98	0.90	0.99	0.87	0.94
0.91	0.80	0.91	0.87	

Table 18 provides the efficiency scores of the youth regarding the use of the internet. The average efficiency score of the youth group regarding the use of the internet is 83%.

Table 18: Efficiency Scores of the Youth Regarding the Use of the Internet

Efficiency Scores of the Youth Regarding the Use of the Internet							
1.00	0.86	0.95	0.67	0.62	0.43	0.95	0.75
0.95	0.86	0.86	0.86	0.62	0.42	0.78	0.98
0.86	0.82	0.82	0.95	1.00	0.43	1.00	1.00
0.95	0.92	0.64	1.00	0.78	0.57	0.86	0.93
0.88	0.78	0.75	0.63	0.72	0.58	0.88	0.72
0.78	0.82	0.85	0.95	0.82	0.61	0.75	0.93
0.88	0.93	0.75	0.78	0.82	0.45	0.90	0.90
0.86	0.88	0.91	0.75	1.00	0.45	1.00	0.90
0.90	0.87	0.69	0.86	0.90	0.45	0.80	0.90
0.75	0.95	0.93	0.64	0.78	0.47	0.90	0.90
0.75	0.91	0.78	0.78	0.78	0.58	0.91	0.78
0.86	1.00	0.82	0.64	0.78	0.55	0.94	0.95
0.86	0.82	0.82	0.90	0.75	0.46	0.91	0.90
0.90	0.90	0.95	0.90	0.98	0.47	0.90	0.93
1.00	0.80	0.68	0.95	0.82	0.75	0.86	0.86
1.00	0.82	1.00	0.90	0.75	0.97	0.95	0.75
0.82	0.84	0.72	0.83	0.95	0.78	0.95	0.83
0.92	0.95	0.78	0.72	0.86	0.72	0.90	0.86
0.82	0.88	0.90	0.72	0.78	0.72	0.90	0.88
0.90	0.72	0.90	0.86	1.00	0.90	1.00	0.88
0.81	0.86	0.62	1.00	0.95	0.95	0.72	0.91
0.95	0.95	0.78	0.82	0.90	0.95	0.90	0.88
0.90	0.78	0.75	0.78	0.90	0.75	0.90	0.83
0.90	0.92	0.62	0.69	0.82	0.90	0.98	0.94
0.86	0.82	0.78	1.00	0.60	0.75	0.84	0.74
0.86	0.90	1.00	1.00	0.55	0.97	0.95	0.72
0.86	0.94	1.00	0.90	0.56	0.90	0.74	
0.86	0.90	1.00	0.72	0.60	0.95	0.82	
0.86	0.90	0.95	0.78	0.55	0.94	0.78	
0.94	0.82	0.95	0.78	0.58	0.90	0.85	
0.95	0.72	0.78	0.67	0.42	0.95	0.75	

Table 19 provides the efficiency scores of women from different ages and income levels regarding the use of the internet. The efficiency scores of women are much lower compared to other groups. The average efficiency score of this group regarding the use of the internet is 61%.

Table 19:Efficiency Scores of Women Regarding the Use of the Internet

Efficiency Scores of Women Regarding the Use of the Internet						
0.62	0.60	0.56	0.90	0.94	0.86	0.86
0.55	0.53	0.62	0.90	0.91	0.86	0.97
0.49	0.58	0.40	1.00	0.89	0.89	0.94
0.60	0.43	0.43	0.92	0.88	0.90	1.00
0.51	0.62	0.60	0.97	0.97	0.86	0.91
0.50	0.37	0.39	0.97	0.89	0.83	1.00
0.67	0.38	0.55	0.62	0.95	0.90	0.85
0.49	0.41	0.51	0.75	0.75	1.00	0.88
0.49	0.59	0.47	0.78	0.95	0.95	0.82
0.55	0.69	0.45	0.55	0.96	0.88	0.81
0.50	0.42	0.69	0.77	0.86	0.92	0.78
0.49	0.67	0.56	0.58	1.00	0.97	0.90
0.74	0.47	0.49	0.80	0.86	0.94	0.77
0.51	0.50	0.46	0.45	0.96	0.83	0.90
0.53	0.58	0.62	0.47	0.88	0.90	0.86
0.64	0.64	0.75	0.51	0.86	0.90	0.92
0.52	0.38	0.64	0.47	0.83	0.88	0.97
0.60	0.44	0.50	0.53	0.95	0.98	0.82
0.53	0.33	0.49	0.43	0.94	0.93	0.92
0.55	0.53	0.90	0.38	0.90	0.86	0.90
0.37	0.58	0.95	0.48	0.97	1.00	0.86
0.45	0.44	0.95	0.46	1.00	0.91	0.82
0.71	0.49	0.86	0.51	0.97	0.84	0.90
0.59	0.90	0.92	0.43	0.89	0.92	0.82
0.47	0.62	0.92	0.39	0.91	0.98	0.92
0.44	0.63	0.94	0.56	0.95	0.89	0.82
0.59	0.62	0.90	0.55	1.00	0.68	0.93
0.61	0.67	0.90	0.79	0.91	1.00	0.86
0.58	0.72	0.95	0.77	0.91	1.00	0.86
0.50	0.69	1.00	0.86	0.91	0.78	0.78

When we analyze the efficiency scores of these four different groups comprising the disabled, seniors, youth and women regarding the use of the internet, we see that the senior group has the highest average efficiency score. This result indicates that individuals tend to use the internet more efficiently when they get older and their income level increases. The women's group has the lower average efficiency score.

5. CONCLUSION

Assessment of the efficiency of the use of e-government services is of critical importance for increasing the efficiency of the use of e-government services by different socio-demographic groups and for the government to provide better services to its citizens.

The level of education is a critical variable for all groups that were included in the study. The rate of the use of the internet and consequently the rate of enjoyment of e-government services increases with an increase in the level of education. As a matter of fact, as demonstrated by numerous studies, there is a linear relationship between the level of education and the level of enjoyment of e-government services and perception of e-government services. The results of the study reveal that the majority of all the individuals, whether disabled, senior, youth or woman, who are included in the study, perceive their economic well-being as "neither good nor poor". Thus, it can be said that the individuals constituting the study group display similar characteristics with respect to their perceived economic well-being regardless of the group they are included in. When the distribution of the disabled, seniors, youth and women who are included in the study with respect to their experience with computers is examined, it is seen that almost all of them (97.03%) have been using computers for more than "1" year and that the seniors are more experienced with computers compared to women and the youth in particular.

The results of the study indicate that all groups that are included in the study believe that using information and communication technologies and the internet is highly necessary. However, it can be said that, in comparison to the women and the youth, the disabled and the senior groups believe that using information and communication technologies and the internet is highly necessary. This attitude can be explained with the fact that the women and the youth have other possibilities to carry out their affairs apart from information and communication technologies and the internet compared to the disabled and seniors. It is seen that the seniors have the highest accessibility to information and communication technologies and the internet compared to the other groups that are included in the study and the disabled have a dramatically low level of accessibility to information and communication technologies and the internet. This result suggests that policies to increase the accessibility of the disabled to information and communication technologies and the internet, in particular, should be implemented as soon as possible.

Results of the study indicate that almost all seniors access the internet from their homes and only 3% of them access the internet from their friends' homes. This result indicates that a majority of the seniors have computers at their homes. It has also been found out that a majority of the disabled (84.3%), as well as the seniors, access the internet from their homes. Accordingly, it can be said that the rate of computer ownership of the disabled is higher than the women and the youth.

The study has revealed that the percentage of individuals enjoying e-government services by receiving assistance from others is higher among the disabled compared to other groups. However, according to the present study, this percentage is very low among the seniors and the percentage of seniors who enjoy e-government services personally is very high compared to other groups. These results indicate that disabled individuals require assistance from others to enjoy e-government services and that novelties are required to be introduced to allow the disabled to enjoy e-government services personally.

The results of the study indicate that seniors visit the web sites of public institutions more frequently compared to other groups. The results of the study also demonstrate that the disabled visit the web sites of public institutions less frequently compared to other groups.

It has been found out that the disabled, seniors, youth and women who are included in the study enjoy news, announcements and e-mail services the most among the above-mentioned services provided by public intuitions.

The results of the study indicate that elimination of the factors affecting the use of e-government services will lead to an increase in the rate of use of e-government services. Consequently, public institutions should exercise more care and attention to make sure that the content of the web sites are comprehensible and that the required information is communicated to the users, in order to increase the efficiency of the use of e-government services.

The average efficiency score of the disabled group regarding the use of the internet is 78%. The average efficiency score of the senior group regarding the use of the internet is 92%. The average efficiency score of the youth group regarding the use of the internet is 83%. The efficiency score of women from different ages and income levels regarding the use of the internet is 61%. This result demonstrates that individuals tend to use the internet more efficiently when they get older and their income level increases. The women's group has the lowest average efficiency score.

REFERENCES

Cooper, W. W. – Seaford, L. M. ve Tone, K. (2000). *Data Envelopment Analysis: A ComperensiveTextWithModels,* Applications, Referencesand DEA-Solver Software. Boston: KluwerAcademic.

DPT (2005). E-Devlet Proje Uygulamaları, [e-Government Project Applications]*http://ekutup.dpt.org.tr/bilisim/e-devlet/tr2005.pdf* (Accessed: 03.06.2009).

Latimer, C. (2009). *UnderstandingTheComplexity of TheDigitalDivide in RelationtoQuality of House CampaignWebsites in The United States*. New Media&Society, 11, 1023-1040.

Jansen, A. (2005). Assessing E-GovernmentProgress-WhyandWhat,*http://ww.afin.unio.no/om_enheten/folk/ansette/jansen.html*, (Accessed: 07.04.2007).

Lee, H. B. ve Comrey, A. L. (1979).Distortions in a CommonlyUsedFactorAnalyticProcedure, *MultivariateBehavioralResearch*, 14, 301-321.

OECD (2003), *The e-GovernmentImperative: Main Findings*, PolicyBrief, OECD Observer.

Özgüler, C. V. (2006). *Yeni Bir Sosyal Dışlanma Biçimi Olarak Sayısal Uçurum AB Üyesi Ülkelerde "e-içerme" Politikaları*, [DigitalDivide as a New Form of SocialExclusionEU Member States' "e-inclusion" Policies], Nisan Bookshop, Eskisehir, Turkey

Technology (2003). TechnologyandSocialInclusion: RethinkingTheDigitalDivide, *http://www.asc.upenn.edu/usr/rgross/documents/ddreview.doc*, (Accessed: 17.09.2008).

TÜİK (2009). HanehalkıBilişimTeknolojileriKullanımAraştırması, [Household ICT Usage Survey]*http://www.tuik.gov.tr/PreHaberBultenleri.do?id=4104*, (Accessed: 21.10.2010).

http://www.turkiye.gov.tr, (Accessed: 08.01.2010).