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The Usage of E-Governance Applications by Higher Education Students

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Abstract

This study aims to analyze the factors affecting the Internet usage of university students using e-governance applications. It is important to examine these factors to understand why the online citizen participation is not increasing as expected, while Information and Communication Technologies (ICT) usage is improving in governance. Governance is an understanding that aims to provide more efficient and effective government applications. It consists of constructing interactive relationships between governments and citizens. New information and communication technologies (ICTs) provide interactive opportunities to citizens. We focus on students because they constitute an important subset of citizen population. The methodology of this study consists of data collected by a survey of 328 university students of Hacettepe University between 2011 and 2012. The sample is taken from six colleges of this university. Our results show that factors affecting the usage of e-governance applications are mainly related to the Internet usage variables rather than socio-economic status of students. Internet security, Internet usage level, Internet usage ability, and Internet usage tendencies are independent variables that have significant effects on the solution of the problem of improving ICTs usage in the processes of governance.

Keywords

E-participation, Offline Participation, Social Media, Internet, University Students, Youth Participation.

This study focuses on the factors affecting the Internet usage of university students using electronic governance applications. It aims at understanding why participation is not increasing as expected while ICT usage is improving in the governance processes. This problem is considered in terms of the factors affecting the Internet usage of university students using electronic governance applications. These factors are mainly related to the factors that are concerned with the Internet usage rather than socio-economic features of university students. In general, socio-economic features, such as gender, age, and income, are important factors but in the university's case, these conditions are

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more or less equalized. Electronic governance (e-governance) applications are related to both the usage of technology and citizen participation in politics. "Electronic" indicates the technological capacities of our age and "governance" is a new perspective in government paradigm. Innovations in both technology and perspective create new understandings for governing such as "governing with people." In public administration theory, this aspect is called governance, and it aims at transforming the governing processes to be more effective and legitimate and the structures and processes more democratic by using interactive communication tools. This aim is closely related to the communication capacities of actors who are in the political, social, and economic networks and their potential to access information and services. These capacities show the extent, velocity, efficiency, and reciprocity of actors in the communication process. The Internet has the capacity to improve interactive communication processes among people, organizations, or institutions at different levels. It can also help in the collection of information about social, economic, and political issues. Therefore, governing with people using Internet technologies is called e-governance.

Governance requires a bottom-up participation flow in the governing process since citizens became the main actors using e-governance applications. Citizens are needed for accountability and they are supposed to be planners, practitioners, and users of e-governance applications. Researches about e-governance have primarily focused on the capacities of information and service delivery of governments, organizations, or institutions and their capacities to realize the citizens' participation (Fan, 2011; Melitski, Carrizales, Manoharan, & Holzer, 2011; West, 2004). The main topic in these studies is related to the questions, "Which level of institutions can achieve interaction with citizens?" and "Do they provide adequate tools or channels contacting and interacting with citizens?" Briefly, most of these works focus on the Internet usage and the online service capacities of institutions and organizations. They analyze websites of government agencies, institutions, or organizations. However, in terms of the interactive understanding of the governing process, citizens' Internet usage in governing processes is as important as Internet usage capacities of organizations or governments. In the literature, limited work has focused on citizens' Internet usage tendencies, factors, and relations affecting citizens' Internet usage in e-governance applications. Explanations provided by Reddick and Turner (2012, p. 1) support the claim that "there is no empirical research that examines satisfaction with contact channels, and a few public opinion surveys have been analyzed examining citizens and their reactions to e-government." This attention underlines the gap of citizen-centric perspectives in research. It also emphasizes that most studies related to e-governance are concerned with the supply-side of interaction process (Reddick & Turner, 2012, p. 1). In addition, studies about e-governance indicate that most studies focused on the experiences in the United States, United Kingdom, and European Union countries. There is a need for e-governance experiences in different countries to deeply understand the issue and the extent of different experiences (Pina, Torres, & Acerete, 2007). Regarding these gaps in the literature, we focus on the e-governance process in terms of the citizen-centric perspective, and this study also provides information about the e-governance process in Turkey, which can contribute to comparative studies by means of data and perspective outside the Western World.

Specifically, this study is concerned with the factors affecting the Internet usage of university students using e-government applications. University students are the main subjects of this study, as young people are seen as the main actors in a variety of processes in the information era (Bakker & de Vreese, 2011; Calenda & Meijer, 2009; Livingstone, 2007; Theocharis, 2011). They constitute an important part of the citizenry because they have the potential to act in unusual situations to realize their capacity as useful, valuable, and reflective citizens (OECD, 2012). In addition, as in other new information and communication technologies, young people are the primary users of the Internet. Hacettepe University is one of largest universities of Turkey in terms of student population and diversity of undergraduate programs. Students come from different cities of Turkey, and they have different socio-economic statuses, backgrounds, income levels, and ICT experiences. Therefore, these students constitute a heterogeneous sub-population of university students in Turkey.

We took a random sample of students of Hacettepe University. Due to the heterogeneity of students of Hacettepe University, our sample is representative of university students from Turkey. This study's methodology consists of statistical analyses of data collected through a survey that was specifically designed and developed by the authors to determine the students' socio-economic status, backgrounds,

income level, and ICTs experiences. The survey was completed by students under the authors' supervision. It contains questions about students' socio-economic status and ICT experiences such as their usage abilities of ICTs, usage of online communication channels, students' offline activities, students' accessibility, communication, interaction willingness of students, and Internet security.

In general, we expect that the factors related to ICT experiences are more effective than social and economic factors. We analyzed the usage of e-governance application by the university students. We defined e-governance applications, which have two main elements in terms of the literature, as e-governance and e-participation. These constitute our dependent variables. Independent variables are the factors whose relation with our dependent variables we aim to understand. These relationships are between *i*) the social and economic conditions and e-participation and e-governance; *ii*) students' Internet usage abilities and e-participation and e-governance; *iii*) students' Internet usage level and e-participation and e-governance; *iv*) students' Internet usage tendencies and e-participation and e-governance; *v*) students' offline political participation and e-participation and e-governance; *vi*) Internet security and e-participation and e-governance; and *vii*) opinions on ICTs and e-participation and e-governance. We provide a detailed analysis of the relationships between these variables. Our analysis shows that social and economic factors are not significantly effectual on the ICT usage of university students using governance applications. Although the factors on ICT usage experiences such as usage ability, usage level, and security on Internet have significant effects on the process, their degree of impact is below our expectations.

The Concepts and Literature

In this part of the study, the main concepts are explained in terms of the literature. The main concept is governance which means a new understanding of government when it is regarded with a positive interpretation and from the standpoint aimed at improving democracy.

E-Governance: Use of Internet in the "Governing with People": Governance consists of requirements that are essential for a better interaction with society in the governing process. Innovations in information and communication technologies provide new opportunities for the interaction between social actors and governments (Flak et al., 2009). Basically, ICTs provide interactive communication channels, which are important in the transformation of the current governing process to a governing process that is open to the collaboration and deliberation of different actors in the processes of service provision and information delivery (Dawes, 2008; Potnis, 2009). This understanding of governance aims at recognizing the citizens' engagement as a part of the decision-making process and focuses on meeting requirements, such as the legitimacy of government applications and decisions, and improvement of governmental productivity (Anduiza, Cantijoch, & Gallego, 2009; Awan, 2005; Dyson, 1997; Häyhtiö & Rinne, 2006; Hauben & Hauben, 1997; Molinari, Wills, Koumpis, & Moumtzi, 2011; Polat, 2005; Riley, 2003; Toprak, 2010; Vaccari, 2012; Zobel, 2005, p. 7).

E-governance refers to the use of ICTs to reach the aims related to governance. Governance can be explained in terms of its main components. These components are participation, transparency and accountability, information and service delivery, and communication and interaction in governing processes (Pina et al., 2007; Sandoval-Almazan & Gil-Garcia, 2012). E-governance is related to the use of information and communication technologies in policymaking, legitimating, auditing, accounting of government application, providing transparency and accountability of governments, and service delivery (Lean, Zailani, Ramayah, & Fernando, 2009; Yildiz, 2007). ICTs are tools to realize these aims and provide an end in itself for the government because, today, governments aim to meet the challenges of the emerging information society. It also means "preparing for greater and faster interactions with citizens and ensure better knowledge management" (OECD, 2001, p. 19). It is important to understand the meaning of the main components of governance to understand e-governance and young citizens' Internet usage in e-governance applications.

The Components of E-Governance and ICTs: In this part, the main components of this study are explained in relation to the literature. These components are participation, transparency and accountability, auditing, information and services delivery, and communication and interaction.

***Participation*:** A traditional understanding of citizens' participation is one where they are expected to obey rules voted upon by a parliament, and their only contribution is participation in elections. In fact, citizens are neither subordinates nor customers; they must be partners in government and involved in phases of public policy, implying that administrations are transparent and public information is accessible (Snijkers, 2005). Which innovations can make citizens' participation more active and extensive rather than just voting in regular elections? Governance provides the contextual base while ICTs provide the structural base for more active and extensive participation of citizens. The idea of "governing with people" consists of citizens' participation in the decision-making process. It is also important for the organization of the governing processes in citizens' interests related to transparency of institutions, accountability, auditing of all processes and institutions, and the efficient use of public resources (Demirhan & Öktem, 2011; Gil-Garcia & Miranda, 2010, p. 58; Gündoğan, 2010, p. 34; McMahon, 2010; Riley, 2003; Sanford & Rose, 2007; Wijkman, 1998; Zizsis, Lekkas, & Papadopoulou, 2009). Because citizens are the main actors in the governing process, and they are the main users of services and auditors of public agencies, citizen participation is the most important component in understanding governance (OECD, 2001).

Innovations in ICTs provide new opportunities for the realization of governance aims. E-governance is defined as an important tool "to deliver improved services, reliable information to all citizens, and greater knowledge to facilitate access to the governing process and encourage deeper citizen participation as willingly, readily, and widely" (Dawes, 2008; Holliday & Kwok, 2004; Pina et al., 2007; Potnis, 2009; UN/APSA, 2002). Dawes (2008) stressed that the use of ICTs in the governing processes creates dynamic environments for governments. ICTs, particularly Web 2.0 technologies, improve participation conditions (Sandoval-Almazan & Gil-Garcia, 2012). Citizens' engagement in governing processes can be seen as a very important dynamic (Sanford & Rose, 2007). Citizens' participation is also closely related to other components of governance because these all require their participation.

***Transparency and Accountability*:** Understanding governance aims to make the governing process and institutions more transparent. Transparency is a "policy dilemma, how to balance openness with legitimate privacy (of civil servants as well as of constituents)" (Millard, 2008, p. 20). "In measurement of government transparency, there are many non-governmental initiatives such as the 'Open Budget' that aims at promoting transparency by defining an ideal format of government data such as: beneficiaries of public funding (agriculture, EU structural funds, etc.), draft legislation, planning applications, air pollution data, members of Parliament, votes, party donations, citizens feedback/satisfaction surveys, and external consultancies (Osimo, 2008, pp. 39-41)."

Accountability is one of the main components of governance and it consists of accounting for public officers and governors in terms of their responsibilities, actions, and decisions (Ackerman, 2004). Accountability is demanded by citizens and public stakeholders to provide the legitimacy of governments (Pina et al., 2007). "Accountabilities to stakeholders and society enable public agencies to be held to account for the resources they have invested" in order to ensure the legitimacy of government (Millard, 2008, p. 21). As a principle of governance, accountability provides rights for citizens to audit the government's transactions in terms of their legal conformity. Legitimacy of governments and officials in terms of transparency and accountability is realized in processes such as elections and audits of agencies, commissions, and courts (Ackerman, 2004).

In fact, transparency and accountability are demanded by the civil society for openness. An educated citizenry and an organized civil society demand more transparency and accountability (OECD, 2001, p. 19). Thus, these principles are also seen as useful for improving civil participation, which consists of different social, economic, and political actors. Access to information and communication opportunities affects the pressure on governments to realize these opportunities. Pina et al. (2007, p. 585) stressed that "ICTs have been seen as a powerful tool to improve control and transparency and to link people, organizations, groups, information, and knowledge." ICTs provide opportunities for citizens in searching for information and in communicating with other citizens. Innovations in ICTs also put pressure on governments and organizations to be more open to society. For example, government reports on financial situation, strategic vision, and public policies are important indicators of legitimacy with regard to the modern conditions of democracy (Demirhan & Öktem, 2011; OECD, 2001).

***Auditing*:** Auditing stays at the intersection of the main principles of governance (participation, transparency, and accountability). Citizen-centric understanding of governing increases the importance of the auditing of public services by citizens and professional organizations. Auditing is a tool for a government to achieve the aims of governance (i.e., accountability and transparency) (Institute of Internal Auditors [IIA], 2006). It is asserted that citizens "might feel more comfortable if the necessity and urgency of investments by the public agencies" are made open to auditing. For a better position to "view objectivity and neutrality of evaluation, a double checking by auditing institutions independent from the executive branch" is also necessary. "This might be particularly important to avoid lock-in to proprietary technologies or vendors (Codagnone & Undheim, 2008, p. 14)."

Auditing can refer to financial issues, performance, investigation, and advisory services of governments (IIA, 2006). An effective auditing requires citizen participation in the auditing process. Citizens' demands for transparency and accountability of governments help the objectivity of the auditing process (IIA, 2006). Citizens also play a central role in auditing in terms of auditing auditors. On the other side, auditors' interdependence and their profession are important topics on this issue. Although citizens' participation in this process is important, there are questions about the possibility of realizing this participation because of its costs to citizens (e.g., time and effort). There are also questions related to other limits, such as information gaps and bureaucracy in the process of attaining government documents. The use of ICTs in governance provides new ways to attain these documents and provides savings in terms of time and effort consumed in the auditing process. Due to governance principles, government institutions have responsibilities for providing accountability and transparency. In this context, some of these institutions provide information to the public and make the reports available to the public online. In addition, citizens can use ICTs to audit these reports and communicate with other stakeholders and government agencies (OECD, 2001).

***Information and Services Delivery*:** For citizens, information sharing refers to sending and receiving information about governmental processes. Information sharing is seen as a precondition for citizens' participation (OECD, 2003b). Services refer to the transactions realized by citizens. Service satisfaction is important for modern citizens (Reddick & Turner, 2012). ICTs provide some opportunities for citizens accessing information and using services. ICT usage in these processes causes a transformation in information and service delivery (West, 2004). By developing ICTs, information and services become more available and less costly to citizens. Studies indicate that service and information satisfaction of citizens using ICTs is better than traditional service and information delivery processes (Reddick & Turner, 2012). "The policy focus on the Information Society has been simply on bringing e-Services online and on benchmarking their availability and sophistication; at the end of 2003, the European Commission, in its official Communication on the 'Role of e-Government for Europe's future,' stressed the need to go beyond simple availability and sophistication and to demonstrate concrete benefits and impacts (Codagnone, 2008, pp. 2-3)."

There are differences in the capacities of information access and service delivery and their usage. There is, in fact, enough evidence to show that citizens primarily use information channels rather than services, indicating that the interaction gap in ICT usage for informational aims is greater than its usage for interaction (Codagnone & Undheim, 2008; Fan, 2011; Reddick, 2005; Reddick & Turner, 2012; Sandoval-Almazan & Gil-Garcia, 2012).

***Communication and Interaction*:** The understanding of governance consists of governments' relational capacity with society. Reciprocity is a component of governance, and communication is important to the emergence of interactive relations in society and the emergence of an active civil society. All processes in 'governing with different actors' require efficient communication, which is mentioned in terms of 'government information networks' or 'information and knowledge networks' (Sandoval-Almazan & Gil-Garcia, 2012). It is stressed that "in terms of interoperability of e-government, technical-semantic and organizational aspects of infrastructure should be available and they should be functional. A developed e-government is expected to have an 'Interactive Service': Transaction based processing involving two-way communication between agency and customers" (Deller & Guilloux, 2008, p. 83).

Communication and interaction are at the center in building governance applications. Innovations in ICTs provide opportunities in interaction and communication processes. Communication and

interaction processes are facilitated by Internet tools such as web-pages, wikis, chat rooms, e-mail, blogs, and social media sites. (Issa, 2009, pp. 249-250; Sandoval-Almazan & Gil-Garcia, 2012; UN, 2008, p. 62, 2010, p. 88; Wegmann, 2010). Citizens can use these tools to contact governors and affect the decision-making process. They can also obtain and demand more information about the political process using these channels without consuming a great deal of time and effort. Finally, citizens and governments can use these tools to create more active and powerful public opinion and to create local, national, and international networks.

Literature on the applications, opportunities, and the importance of the usage of ICTs in governance demonstrate that ICTs provide usable tools for governing with the people. ICTs contribute to the development of the new understanding of government, which is more participatory, transparent, accountable, auditable, effective, efficient, communicative, and interactive. Due to the bottom-up character of this aspect of the government, citizens become the main actors of the governance process; they are active participants rather than passive users. Literature about e-governance especially focuses on the organizational level of the process in terms of online service provision and policy making by concentrating on utilizing online channels for efficiency. However, the citizen-centric approach of governance should be focused on the citizen's experiences on the usage of ICTs using governance applications. Reddick and Turner (2012) looked at the lack of research and information on citizens' experiences, reactions, and behavior about using ICTs in governance. Another important gap in the literature is the lack of information in comparative studies which especially focus on the developing countries in their road towards being information societies and in aiming at restructuring their governmental organizations as appropriate to the modern democratic conditions in the era of globalization (Pina et al., 2007). This study contributes to the literature in four manners: *i*) it evaluates the governance application from a citizen-centric perspective; *ii*) it studies the factors effecting the ICT usage of university students; *iii*) it generates data about ICT usage of the citizens in the process of governance in Turkey; and *iv*) it analyzes the problem wherein the level of citizen participation using online tools in the governance process is lower than expected while ICT usage in governing process is increasing.

Method and Research Design

To test the hypotheses of this study, we used a descriptive/survey model research technique. We determined the population of this study as university students who have more opportunities to access basic means of ICT relative to the entire society. We undertook a survey among university students to collect data and information about users' socio-economic conditions, Internet usage abilities, Internet usage level, students' tendency to offline and online participation, and students' views on Internet usage and Internet security. The variables to test our hypotheses are defined in the following. We also statistically test our hypotheses and explain them in the findings and results section.

Hypotheses

The main aim of this study is to look into the problem of why online citizen participation is not increasing as expected while ICT usage is improving in governance. This study analyzes the factors affecting the students' usage of Internet in the process of using e-governance applications. One of our basic assumptions is that the usage of e-governance applications by university students is affected by the factors related to the students' usage abilities of Internet, usage level, usage tendencies, students' online political participation, Internet security, and students' view on ICTs rather than socio-economic factors. E-governance and e-participation are determined as dependent variables. Independent variables will be defined in detail in the part devoted to the variables and dimensions. Specifically, the following hypotheses are phrased in accordance with the aims of this study:

H1) There is no significant relationship between social and economic conditions (such as gender, age) and income and e-governance and e-participation;

H2) There are significant relationships between students' Internet usage abilities and e-participation and e-governance;

H3) There are significant relationships between students' Internet usage level and e-participation and e-governance;

H4) There are significant relationships between students' Internet usage tendencies and e-participation and e-governance;

H5) There are significant relationships between students' offline political participation and

e-participation and e-governance;

H6) There are significant relationships between providing e-security and e-participation and e-governance;

H7) There are significant relationships between students' views on ICTs and e-participation and e-governance; and

H8) There is a significant relationship between e-governance and e-participation.

To test these hypotheses, we defined dimensions for each dependent and independent variable. These are explained in detail in variables and dimensions.

Sample

Our population is composed of the students of Hacettepe University registered in the third and fourth year courses in the spring semester of 2011 and 2012. The total number of students in the population is 12,624 in twelve colleges. Because elective courses are, in general, available among the third and fourth year courses, students attending these courses include students from of all the years. Thus, this definition of population is practical and cost-effective. A random sample from this population provides a representative sample to analyzing our hypotheses. A list of students was obtained from the registrar's office. Based on this list, a multistage sampling was applied. At the first stage, six of the twelve colleges of the university were randomly selected. As a result, the colleges of Fine Arts, Education, Science, Engineering, Letters, and Economics and Administrative Sciences were included in the sample. At the second stage, a department was randomly chosen from each college; and at the last stage, the total sample size (328) was distributed proportionally to the total number of students attending the third and fourth year courses in each department by using simple random sampling. Consequently, a sample of 328 students was taken from these six colleges by multistage sampling. Due to the simple random sampling used at the last stage, our sample is random. Because all the colleges and departments had the chance of being selected in the sample, our sample successfully represents the population. Because the amount of tolerance using this sampling scheme was 5.5% on average, we also had a reasonable sampling error.

In the sample, the proportion of male students is 45% while that of females is 55%. Proportions of students form age groups "17-19," "20-21," "22-23," "24-25," and "26<" are 10%, 20%, 59%, 8%, and 3%, respectively. Of the students in our sample, 2.1% are working full-time, 11% of them are working part-time, 79% of them are not working, and 7.9% of the students are receiving a scholarship. Monthly income of 41.8%, 31.7%, 13.4%, 4.9%, and 3.4% of the students is less than 500 TL, between 501 and 1000 TL, between 1001 and 1800, between 1801 and 2500, and more than 2500, respectively. Also, 4.9% of the students did not respond to the question about income.

Data Analysis

In this study, an optimal scaling method given for multivariate categorical (categorical principal component analysis) data is used for reducing the number of dimensions of dependent and independent variables (Meulman, 2013; Saito & Otsu, 1988). Hypothetical variables corresponding to the reduced dimensions are then obtained using polytomous latent class analysis (Linzer & Lewis, 2011). Categorical principal component analysis (CPCA) is analogous to a well-known factor analysis method for multivariate categorical data. CPCA is used to reduce the number of dimensions over the categorical variables. We obtained a subset of categorical variables from a set of correlated categorical variables, and the variables included in the subset are not correlated with one another. In this way, we determined a subset of variables that can represent the information contained in all dimensions of a variable with less hypothetical variables. In the CPCA, eigenvalues were used along with Cronbach's alpha to determine the number of meaningful dimensions. In all of our analyses, the number of meaningful dimensions equaled the number of eigenvalues that are greater than one, and the value of Cronbach's alpha is simultaneously at least 0.65.

Latent class analysis is a frequently used analysis method in social sciences. We use latent class analysis to constitute the hypothetical variables over the subsets determined by the CPCA method. To conduct a latent class analysis, the "polytomous variable latent class analysis" procedure, provided by Linzer and Lewis (2011), in the R program is used.

In order to test the hypotheses of interest, the well-known chi-square test is applied over the relevant two-way contingency tables, which are constructed by two variables. To figure out the structure of relationship between more than two variables, a

multi-way contingency table is constructed, and all possible log-linear models are fitted to the contingency table of interest. The one that gives the best fit is identified. Because each log-linear model corresponds to a specific relationship structure, we obtain the structure of relationship between variables of interest; and hence, we test the corresponding hypothesis this way. If a relationship between variables of interest is found significant, the value of associated correlation coefficient is also provided.

Variables and Dimensions

Use of e-governance applications by students is analyzed in terms of the following variables: students' socio-economic conditions, ICTs' usage abilities, ICTs usage level, students' offline participation, Internet security, students' Internet tendencies, and students' view on ICTs. Components of e-governance applications are explained in Concepts and Literature. Activities related to e-governance applications are classified as e-governance and e-participation; hence, the dependent variables are e-governance and e-participation. Although participation is a component of governance, it is evaluated as a dependent variable due to its basic situation in governance applications. These variables correspond to the questions in our questionnaire.

Both e-governance and e-participation have dimensions we used to test our hypotheses:

1- *Dimensions for e-governance* include

(*i*) having an e-government password, (*ii*) having information about online municipality services, (*iii*) using e-government services, and (*iv*) visiting the Internet site of the local municipality where the students live.

2- *Dimensions for e-participation* include

(*i*) using the Internet for voting in the elections, (*ii*) engaging or arranging an organization using the Internet, (*iii*) use of municipality's online services, (*iv*) providing suggestions concerned with the service of local municipality through the Internet, and (*v*) sending a comment or message to a political discussion program in television using e-mail or a similar web tool.

These variables are related to the components of governance mentioned above and mainly refer to participation, information and service delivery, and interaction and communication. Also, they are implicitly related to transparency, accountability, and auditing processes. The independent variables and their dimensions are expressed in relation to the literature below:

1. Citizens' socio-economic conditions are effectual on their Internet usage (Norris, 2001). Due to this relation, these features can be effectual on the citizens' usage of e-governance and their e-participation. However, in our case of university students, we expect that university environments can have an egalitarian effect on the students' socio-economic conditions. Therefore, socio-economic conditions are not effective on students as much as citizens.

Dimensions for socio-economic conditions include

i) age of citizens, ii) gender of citizens, and iii) income of citizens.

2. Citizens' Internet usage abilities refers to the use of information and communication technologies, which is related to the ICT usage skills of the citizens and their adaptation to technology use (Jaeger & Thompson, 2003, p. 390). For example, video or picture sharing on a website requires some technological skills. Oates and Gibson (2006, p. 6) state that "experience with the Internet, measured in terms of the amount of the spending time online, is the greatest determinant of their tendency to seek news and information about current events, express opinions, and create web pages." Having social media accounts provides information about the individuals' ability to use technology. Many people do not have any social media account and they do not use these tools. Having a Facebook or Twitter account is the precondition of usage of these tools. And having these accounts, using e-mail, or writing blog give information about the citizens' adaptation to the social media, which is a recent development in information and communication technologies.

Dimensions for Internet usage ability include:

(*i*) reading newspaper, shopping or watching TV online, (*ii*) uploading a video or a picture to the YouTube or a blog, (*iii*) having a Facebook or Twitter account, (*iv*) using MSN Messenger, (*v*) having a blog, and (*vi*) having an e-mail account.

3. Citizens' Internet usage level is related to students' usage of e-mail, social media, forums, web-sites in communication processes, and it indicates citizens' communication capacity using the Internet. The importance of citizens' usage of online communication channels is underlined in the studies of e-governance and e-government (Lean et al., 2009; Perez & Hernandez, 2005; Reddick &

Turner, 2012). Use of e-governance applications requires online citizen activities and governmental initiatives for improving online communication channels (Jaeger & Thompson, 2003). Citizens' Internet usage also includes accessibility to technologies, which is mentioned as a requirement for the realization of e-government applications. Jaeger and Thompson (2003, p. 391) state that "for e-government to be effective within a nation, the necessary technological infrastructure must be present and provide service to all citizens." With the development of ICTs, it can be said that gaps in usage abilities and accessibility to technologies decreased in developed countries. However, these issues remain a problem for many countries where e-government processes are still developing. If primary requirements are not provided for citizen participation, availability and usability problems arise, which originate from defects in social and economic capacity and resources (Demirhan & Öktem, 2011). This situation is called the digital divide and it consists of deficiencies in socio-economic conditions, social relations, and social status of individuals (Bimber & Davis, 2003; Dutton, Helsper, & Gerber, 2009; Kiesler, Zdaniuk, Lundmark, & Robert, 2000; Norris, 2001; Price & Cappella, 2002; Zissis et al., 2009, p. 3). Additional factors related to citizens' usage abilities are Internet security, privacy gap, inequalities in education, income, gender, and age (Gökmen, 2009, p. 235; Krueger, 2002; Saglie & Vabo, 2009).

Dimensions for Internet usage level include

(*i*) the amount of time spent on the Internet, (*ii*) the aim of Internet usage, (*iii*) student accessibility potential to the Internet at home, and (*iv*) place of access.

4. Citizens' Internet usage tendencies in communication processes refer to the extent of usage of online communication tools. It is more than having a social media account or an e-mail. Internet provides different opportunities in different processes but in order to determine the extent by which it is used by citizens, it is important to understand the relationship between ICTs and users' Internet activities. Citizens' Internet usage tendencies show citizens' usage willingness.

Dimensions for Internet usage tendencies include

(*i*) students' engagement in a discussion on a forum or blog, and (*ii*) finding a friend on online networks.

5. Citizens' offline political participation is determined in relation to the e-participation of citizens in various studies of e-participation. E-participation requires some technological skills. In terms of offline participation, the potential of citizens in "…thinking about public issues and listening to, and engaging in, argument and counter arguments rather than simply asking questions" is important (OECD, 2003a, p. 86).

Dimensions for offline participation include

(*i*) the value of the implementation of decisions which consists of students' ideas and (*ii*) offline voting in a municipality service.

6. Providing security for information display, service delivery, and communication is important for Internet use in different processes such as e-governance applications (Renaud, 2012). Security is also important in individual usage of ICTs. For example, the security of computers and Internet connections in public places can affect Internet usage for services and obtaining information. However, Renaud (2012) suggests that users demand convenience more than security, but this demand does not decrease the importance of security against threats. In this study, we examine the importance of security in the use of governance applications by citizens.

Dimensions for Internet security refer to believing the following:

(*i*) the safety of the Internet in general, (*ii*) the safety of communication on Internet channels, and (*iii*) the safety of online commerce.

7. Citizens' opinions of ICTs can affect ICT usage in different processes, such as e-governance applications, and it relates to people's opinions of the development and usage of ICTs. Generally, this issue is explained in terms of the concept of "technology acceptance." It is stated that "a person's acceptance of an information technology is determined by his/her voluntary intentions to use that technology (Al-Adavi, Yousafzai, & Pallister, 2005)."

Dimensions for views on ICTs are measured in terms of negative or positive opinions of citizens about

(*i*) ICT development and (*ii*) ICT usage.

The hypotheses of this study are tested by using our dependent variables and independent variables explained in Table 1 in detail. The hypotheses are organized and expressed for each variable and its corresponding dimension.

Table 1
Independent and Dependent Variables with Their Dimensions

Independent Variables	Dependent Variables
1) Socio-Economic Features 1) Gender 2) Age 3) Income **2) Internet Usage Abilities Dimensions** 1) Reading newspaper or shopping or watching TV online 2) Uploading a video or a picture to the YouTube or a blog 3) Having a Facebook or Twitter account 4) Using MSN Messenger 5) Having a blog 6) Having an e-mail account **3) Internet Usage Level Dimensions** 1) Amount of time spent on the Internet 2) Aim of Internet usage 3) Student accessibility potential to the Internet at home 4) Place of access **4) Internet Usage Tendencies Dimensions** 1) Students engagement in a discussion on a forum or blog 2) Finding a friend on online networks **5) Offline Political Participation** 1) The value of the implementation of decisions which consists of students' ideas 2) Offline voting in a municipality service **6) Security** 1) The safety of communication on Internet channels 2) The safety of online commerce **7) Views on ICTs** 1) ICTs' development and 2) ICTs' usage	**1) E-Governance Dimensions** 1.1) Having an e-government password 1.2) Having information about online municipality services 1.3) Using e-government services, and 1.4) Visiting the Internet site of the local municipality where the students live **2) E-Participation Dimensions** 2.1) Using the Internet for voting in the elections 2.2) Building or maintaining an organization using the Internet 2.3) Use of municipality's online services 2.4) Providing suggestions concerned with the service of local municipality through the Internet 2.5) Sending a comment or message to a political discussion program in television using e-mail or a similar web tool

Dimension Reduction for Dependent and Independent Variables

To offer general comments on the relations between dependent and independent variables, we combine dimensions of variables under new factors by using optimal scaling. New hypothetical variables corresponding to the reduced dimensions of dependent and independent variables were obtained using polytomous latent class analysis.

E-participation is reduced to two new factors. The first factor (E-participation 1) is related to building or maintaining an organization using the Internet, and the second (E-participation 2) is related to the remaining dimensions mentioned for e-participation. E-governance is also reduced to two factors. The first one (E-governance 1) is related with having an e-government password and using e-government services, and the second (E-governance 2) is related to the remaining dimensions mentioned for e-governance. The dimensions of Internet usage ability and Internet usage are collected under two factors for each variable. The first factor of Internet usage ability (Internet usage ability-1) includes reading the newspaper, online shopping and watching TV online, and the remaining dimensions are collected under the second factor of Internet usage ability (Internet usage ability-2). The first factor of Internet usage (Internet usage-1) contains the aim of Internet usage and the accessibility potentials of students to the Internet in their home, and the remaining dimensions are collected under the second factor of Internet usage (Internet usage-2). It is possible to collect dimensions of Internet usage tendencies, Internet security, offline participation, and views on ICTs in one factor for each variable. Reduced dimensions, namely new factors, are used in further analyses.

Factors for variables after the dimension reduction are summarized in Table 2.

Table 2
Factors of Variables after the Dimension Reduction

Independent Variables	Dependent Variables
1) Socio-Economic Features 1) Gender 2) Age 3) Income **2) Internet Usage Abilities Reduced Dimensions** ***Internet usage ability 1*** 1.1) Reading newspaper, shopping or watching TV online ***Internet usage ability 2*** 2.1) Uploading a video or a picture to the YouTube or a blog 2.2) Having a Facebook or Twitter account 2.3) Using MSN Messenger 2.4) Having a blog 2.5) Having an e-mail account **3) Internet usage level Reduced Dimensions** ***Internet usage level 1*** 1.1) Aim of Internet usage 1.2) Student accessibility potential to the Internet at home ***Internet usage level 2*** 2.1) Amount of time spent on the Internet 2.2) Place of access **4) Internet usage tendencies** 1) students engagement in a discussion on a forum or blog 2) finding a friend on online networks. **5) Offline political participation** 1) The value of the implementation of decisions which consists of students' ideas 2) Offline voting in a municipality service **6) Security** 1) The safety of communication on Internet channels 2) The safety of online commerce **7) View on ICTs** 1) ICTs' development and 2) ICTs' usage	**1) E-Governance Reduced Dimensions** ***E-governance 1*** 1.1) Having an e-government password 1.2) Using e-government services ***E-governance 2*** 2.1) Having information about online municipality services 2.2) Visiting the Internet site of the local municipality where the students live **2) E-Participation Reduced Dimensions** ***E-participation 1*** 1.1) Building or maintaining an organization using the Internet ***E-participation 2*** 2.1) Using the Internet for voting in the elections 2.2) Use of municipality's online services 2.3) Providing/offering suggestions concerned with the service of local municipality through the Internet 2.4) Sending a comment or message to a political discussion program in television using e-mail or a similar web tool

Data Collection and Tools

This research aims to analyze students' Internet usage and online activities while using e-governance applications in the context of the relations between different variables that affect citizens' Internet usage in government applications. To achieve this aim, a survey was designed and applied to the students to explore possible relationships. This survey was administered on the students in the spring semester of 2011 and 2012, and the data was gathered from a survey of 328 university students of Hacettepe University. The survey is designed to understand students' socio-economic conditions, ICTs' usage abilities, computer usage, usage of online communication channels, citizens' offline activities, citizens' accessibility, communication, and interaction willingness of citizens, and Internet securities.

Because the aims of this study do not include developing a generic scale, we did not conduct formal validity and reliability studies for our survey. Instead, we evaluated the representability of our survey by the qualities of the sample. As noted in Section 2.2, the demographic qualities of our sample are balanced; we do not have cases which can be outliers; and we have an acceptable sampling error in our inferences.

Findings

In general, the findings can be summarized in terms of our main relationship categories. Our findings show that there is no significant relation between e-governance and e-participation and the socio-economic conditions of university students except for a very limited number of combinations. The finding about effects of socio-economic conditions on students' usage of e-governance applications meets our expectation. Apart from two relationship categories (relationship between offline participation and e-governance and e-participation; and relationship between the views on ICTs and e-governance and e-participation) findings are consistent with our expectations. The findings demonstrate that there are statistically significant relationships between combinations of the dimensions of dependent and independent variables under the following relation categories: i) Internet Usage Ability and E-governance/E-participation, ii) Internet Usage Level and E-governance/E-participation, iii) Internet Usage Tendencies and E-governance/E-participation, iv) Internet Security and E-governance/E-participation, and v) E-governance and E-participation (relationship between two dependent variables). These findings are obtained at 5% level of significance ($\alpha = 0.05$). All of the findings are presented on the tables in the next section of this study with statistical information related with our hypotheses.

Results

In this section, relationships between dependent and independent variables are analyzed by appropriate statistical methods mentioned in Section 2.3. Inferences for each hypothesis are expressed and presented in particular tables.

Results for Hypothesis 1

The first hypothesis is that *(H1) there is no significant relationship between social and economic conditions such as gender, age, and income and e-governance and e-participation.* Although it is suggested in the literature that e-participation is affected by the individuals' social and economic conditions, in contrast to the literature, our expectation consists of the reason that the university environment has an equalizing effect on the conditions of students who have different socio-economic backgrounds.

The findings about this relationship support our hypothesis strongly. Table 3 presents the findings for the first hypothesis:

Table 3
Results for the Hypothesis 1

	Variables and Dimensions	Gender	Age	Income
E-Gov.-1	Having E-gov. Password	12% P=0.037	-	-
	Using E-gov. Services	-	-	-
E-Gov.-2	Having Information about Online Municipality Services	-	-	-
	Visiting the Internet Site of the Local Municipality Where the Students Live	-	-	-
E-Part.-1	Building or Maintaining an Organization Using the Internet	21% P=0.028	12% P=0.023	19% P=0.012
	Using the Internet for Voting in the Elections	-	-	-
E-Part.-2	Use of Municipality's Online Services	-	-	-
	Providing Suggestions on the Service of Local Municipality	-	-	-
	Sending a Comment or Message to a Political Discussion Program	-	-	-

Table 4
Results for the Hypothesis 2

		IUA - 1	Internet Usage Ability (IUA) –2				
	Variables and Dimensions	Reading newspaper shoppi ng / watching TV online	Uploading a video or a picture to YouTube or a blog	Having a Face-book/Twitter account	Using MSN Messenger	Having a blog	Having an e-mail account
E-Gov-1	Having E-gov. Password	11% P=0.001	12% P=0.002	-	-	-	-
	Using E-gov. Services	11% P=0.003	12% P=0.011	-	-	-	-
E-Gov-2	Having Information about Online Municipali-ty Services	-	-	-	-	-	-
	Visiting the Internet Site of the Local Municipality Where the Students Live	-	-	-	-	-	-
E-Part-1	Building or Maintaining an Organization Using the Internet	21% P=0.000	13% P=0.002	35% P=0.000	-	-	-
E-Part-2	Using the Internet for Voting in the Elections	-	-	-	-	-	-
	Use of Municipality's Online Services	-	-	-	-	-	-
	Providing Suggestions on the Service of Local Municipality	-	-	-	-	-	-
	Sending a Comment or Message to a Political Discussion Program	-	-	37% P=0.001	-	17% P=0.002	-

According to the results shown in Table 3, there is no significant relationship between all of the dimensions of e-governance and socio-economic factors except the relationship between having e-government password and gender. Furthermore, we found no significant relationship between e-participation and socio-economic factors; however, we observed a significant relationship between one of the dimensions of e-participation (building or maintaining an organization using the Internet) and socio-economic factors.

Results for Hypothesis 2

The second hypothesis in this study is that *(H2) there are significant relationships between students' Internet usage abilities and e-participation and e-governance*. Results are shown in Table 4. There is a significant relationship between E-governance 1 and E-participation 1 and Internet Usage Ability 1 and the first dimension of Internet Usage Ability 2. Reading newspaper or shopping or watching TV online shows us the activities of students on the Internet, and uploading a video or a picture to social media have significant relationships between having e-government password, using e-government services, and building or maintaining an organization using the Internet. The descriptive results of this study present that the proportion of students who uploaded a video or a picture to YouTube before is 35.1%. The usage of social media like Facebook and Twitter or having a blog are also related to the building or maintaining an organization using the Internet, and sending a comment or message to a political discussion program. The proportion of students having a blog is 15.9%, having an E-mail account is 99.4%, having a Facebook account is 83.5%, having a Twitter account is 34.5%, and using MNS Messenger is 86.9%.

These results demonstrate that the usage of Internet tools and social media channels have significant impacts on the usage of some important applications of e-governance and e-participation. Nevertheless, results show that there is not a significant relationship between many online activities and usage of e-governance applications while students use ICTs at a high rate with the exception of low level usage of blogs and Twitter.

Results for Hypothesis 3

The third hypothesis in this study is that (*H3) there are significant relationships between students' Internet usage level and e-participation and e-governance.* The results on Table 5 present that the aim of users has impact

Table 5
Results for Hypothesis 3

		Internet Usage Level 1		Internet Usage Level 2	
	Variables and Dimensions	Aim of Internet usage	Student accessibility potential to the Internet at home	Amount of time spent on the Internet	Place of access
E-Gov-1	Having E-gov. Password	23% P=0.002	-	-	-
	Using E-gov. Services	23% P=0.001	-	-	13% P=0.056
E-Gov-2	Having Information about Online Municipality Services	-	-	24% P=0.003	-
	Visiting the Internet Site of the Local Municipality Where the Students Live	-	17.2% P=0.040	17% P=0.030	24% P=0.01
E-Part-1	Building or Maintaining an Organization Using the Internet	23% P=0.011	-	19% P=0.013	-
E-Part-2	Using the Internet for Voting in the Elections	-	-	20% P=0.008	-
	Use of Municipality's Online Services	-	-	20% P=0.007	-
	Providing Suggestions on the Service of Local Municipality	-	10% P=0.027	20% P=0.009	-
	Sending a Comment or Message to a Political Discussion Program	-	-	20% P=.004	-

on the usage of e-governance applications and on e-participation. The proportion of students according to the aim of Internet usage are 33.5%, 17.6%, 8.2%, 10.7%, 1.7%, 13.4%, and 14.9% for research, fun, news, communication, media, homework, and networking, respectively. The opportunities of students accessing ICTs at home significantly affect the e-participation of students on issues related to local municipality. It means that digital divide is affected by the usage of online channels provided by local municipalities. The descriptive results show that 92.70% of the students have a computer and 94.2% of them have Internet connection in their living area.

Time spent on the Internet is also an important factor that has effects on the usage of e-governance application. The proportions on the range of hours that students use the Internet are 18.9%, 45.7%, 24.4%, 6.7%, and 4.3% for 0-1 hours, 1-3 hours, 3-5 hours, 5-7 hours, and more than 8 hours, respectively. It shows that when students spend more time on the Internet, their usage level of e-governance applications and their e-participation activities increase. Lastly, students' online activities are significantly affected by the place of access.

Results for Hypothesis 4

The fourth hypothesis in this study is that (*H4) there are significant relationships between students' Internet usage tendencies and e-participation and e-governance.* The results on Table 6 present that students' online engagement in a forum or blog have significant effects on the usage of e-governance applications and e-participation. When they engage in a discussion in a forum or a blog they are willing to use e-government applications and engage in participative processes. Students' engagement in a discussion in a forum or blog has a significant relationship with almost all the dependent variables. The proportion of students who engage in a discussion in a forum or a blog is 32.9%.

The second dimension of finding a friend on online networks has also significant relation with the dimensions of e-governance (1) and e-participation (2). The proportion of students who found a friend on the Internet is 54.3%.

Results for Hypothesis 5

The fifth hypothesis in this study is that (*H5) there are significant relationships between students' offline political participation and e-participation and e-governance.* The results on these relationships indicate that in contrast to our expectations, which are parallel to the literature, there is not any significant relationship between offline participation and online participation. It is interesting because there is a dominant view in the literature that people who are usually active in politics are also active in online politics. These results present the importance of rethinking the relationship between online and offline participation.

Descriptive results show that only 23.5% of the students voted offline on a municipality service before.

Table 6
Results for the Hypothesis 4

	Variables and Dimensions	Internet Usage Tendencies: Students' engagement in a discussion in a forum or blog	Internet Usage Tendencies: Finding a friend on online networks
E-Gov-1	Having E-gov. Password	13% P=0.047	13% P=0.047
	Using E-gov. Services	13% P=0.047	13% P=0.047
E-Gov-2	Having Information about Online Municipality Services	-	-
	Visiting the Internet Site of the Local Municipality Where the Students Live	-	-
E-Part-1	Building or Maintaining an Organization Using the Internet	10% P=0.048	-
E-Part-2	Using the Internet for Voting in the Elections	15% P=0.039	17% P=0.024
	Use of Municipality's Online Services	15% P=0.041	17% P=0.028
	Providing Suggestions on the Service of Local Municipality	15% P=0.037	17% P=0.031
	Sending a Comment or Message to a Political Discussion Program	15% P=0.034	17% P=0.033

Results for Hypothesis 6

The sixth hypothesis of this study is that (*H6) there are significant relationships between providing security and e-participation and e-governance.* Internet security is an important factor for e-participation and not on the dimensions of e-governance. Table 7 shows that for all the combinations of e-participation, students require Internet security more than usage of e-government activities. There is a significant relation between Internet security and e-participation (1) and (2). Descriptive results show that 56.7% of students think that communication on the Internet is safe, and 51.5% of students think that commerce on the Internet is safe. Also, 45.7% of students do not rely on the safety of Internet connection that is provided for public access in public areas.

Table 7
Results for the Hypothesis 6

	Variables and Dimension	Internet Security: The safety of communication on Internet channels	Internet Security: The safety of online commerce
E-Gov-1	Having E-gov. Password	-	-
	Using E-gov. Services	-	-
E-Gov-2	Having Information about Online Municipality Services	-	-
	Visiting the Internet Site of the Local Municipality Where the Students Live	-	-
E-Part-1	Building or Maintaining an Organization Using the Internet	19% P=0.011	19% P=0.011
E-Part-2	Using the Internet for Voting in the Elections	20% P=0.009	20% P=0.009
	Use of Municipality's Online Services	20% P=0.012	20% P0.014
	Providing Suggestions on the Service of Local Municipality	20% P0.008	20% P0.008
	Sending a Comment or Message to a Political Discussion Program	20% P0.010	20% P0.020

Results for Hypothesis 7

The seventh hypothesis in this study is that (*H7) there are significant relationships between students' opinions on ICTs and e-participation and e-governance.* The results about the views on ICTs are not effectual for the students' usage of e-governance applications. There is no significant relationship whatsoever between any relation combinations. This factor should be considered in terms of the special features of our sample. Since students, being young, are the most active users of technology, they constitute the most adapted group to the Internet. Therefore, the expectation in this hypothesis should be reconsidered considering this context. Descriptive results show that 72.0% of students follow ICT developments.

Results for Hypothesis 8

The last hypothesis in this study is that (*H8) there are relationships between e-participation and e-governance.* The results on Table 8 show that the usage of municipality services has effects on e-participation activities. Also, having an e-government password is affecting Internet usage for voting and participation in a discussion program by sending comments.

Table 8
Results for the Hypothesis 8

		E-governance 1		E-governance 2	
	Variables and Dimensions	Having an e-government password.	Using e-government services	Having information about online municipality services	Visiting the Internet site of the local municipality where the students live
E-part-1	Building or Maintaining an Organization Using the Internet	-	-	-	-
E-part-2	Using the Internet for Voting in the Elections	13% P=0.021	-	-	18% P=0.039
	Use of Municipality's Online Services	-	-	16% P=0.004	-
	Providing Suggestions on the Service of Local Municipality	-	-	12%P=0.034	20% P=0.013
	Sending a Comment or Message to a Political Discussion Program	12% P=0.025	10% P=0.06	10% P=0.06	18% P=0.036

E-governance 1 and 2 have significant relationship with the dimensions of e-participation 2. But this relation especially arises in the relationship between e-governance 2 and e-participation 2. According to descriptive results, the proportion of students having e-government password is 13.1%, using e-government services is 16.5%, having information about online municipality services is 24.1%, and visiting the Internet site of the local municipality where students live is 11.0%. These results show that most of the students have no information about e-governance applications and they do not use online tools during the use of e-government services.

Discussion

In this study, we focused on the students' Internet usage experiences. This topic is important for the literature because the literature mostly focuses on the Internet usage of institutions and organizations such as online service provision of government, Internet usage of governmental actors, and their Internet usage capacity. As a response to this gap of information about users' Internet usage experiences, this study evaluates the users' activities, conditions, factors, and experiences having effects on the students' usage of e-governance applications. It is important because the idea of governing with the people consists of the citizen-centric process of governing. Our study presents inferences and data about factors affecting the usage of e-governance applications. It illustrates the relationships that are important to increase online participation and using e-governance applications.

We assumed that the university environment has an equalizing effect on the socio-economic conditions of students. Our study presents an example of that if the social-economic conditions are equalized; we can be more informed about the factors affecting the Internet usage of students utilizing e-governance applications disregarding the socio-economic conditions. In this regard, we found the effective factors on the Internet usage of students. This study shows that Internet usage abilities, Internet usage level, Internet usage tendencies, and Internet security have significant effects on the usage of e-governance applications. This result does not mean that socio-economic features do not affect the Internet usage of citizens in general as it is expressed in the literature (Norris, 2001). However, this is the case in particular among university students who equally have access to the basic socio-economic conditions to use ICTs.

In the literature, digital divide is seen as a relevant problem for the development of Internet usage of citizens. We see that digital divide is a problem for students' usage of e-governance applications, too. Especially, it is a problem when they try to access the Internet outside the borders of a university campus, for example in their living area or in their home. Our findings support the literature in terms of the relationship between accessibility, location, and students' participation. When they can have access to the Internet in their homes, the possibility of offering a suggestion online concerning local municipality services increases. In terms of this result, the issues of improvement of local governance and the services of local municipalities are brought into question. Since the understanding of e-governance assumes more

participatory and horizontal way of governance, local governance is one important part of this perspective (Demirhan & Öktem, 2011).

Another point of discussion is the importance of the aim of Internet usage. It is important because even if all the infrastructural conditions are completed in a country and all the citizens have access to ICTs, the usage of Internet for social, economic, or democratic development is not realized by citizens or organizations. To be an information society, the aim of Internet usage is very important factor. Since the usage of technology is not enough to use it for realizing the principles of governance, the findings of this study support our expectation that students' usage aims are important on the usage of e-governance applications. This result puts attention on the consciousness of citizens about new technologies' usage. On this point, we may assume that education has important potential and responsibility to provide a perspective for citizens about ICT usage for democratic development.

When we focus on the discussion about the relationship between offline and online participation, we observe that this relation is not powerful in the case of university students in contrast to the literature where studies claim a powerful correlation between *offline participation and online participation* (Gibson, Lusoli, & Ward, 2005, p. 562; Weber, Loumakis, & Bergman, 2003). These are important results because most of the politically active people are assumed to be active in online politics. This result may support the exclusion from politics of young people, who have already been seen as apolitical citizens in Turkey. These results create for us a new way of thinking about the young peoples' position from the point of including them in online politics without depending on their offline activities. We think that this is a more constructive perspective when thinking about their role in politics.

Internet safety is another important issue for students' Internet usage. It has affected the students' communication, commerce, and usage tendencies. Security on Internet affects students' activities. Our study demonstrates that online security has effects on the activity of finding friends on forums or social network sites. Most students refrain from forming friendships through online networks because of their low level of safety. However, students who establish friendships through online networks have a desire to use the Internet for e-governance applications. Interaction and communication on the Internet are important because these bind people and contribute to the development of trust among citizens and an environment wherein people are connected with one another on social and political issues. This connection can increase the demand for the use of e-governance and e-participation applications, which provide opportunities for a participatory way of governing; this is the idea of governing with the people.

Conclusion

In this study, we aimed at understanding the reason why online citizen participation is not increasing as expected while ICT usage is improving in governance. We considered the meaning of governance positively as governing with people which includes components of participation, transparency and accountability, auditing, information and service delivery, and communication and interaction. These components are important to construct a democratic governing process consisting of bottom up participation. We evaluated governance in relation to ICT development, just like many studies in the literature. Also, we focused on important factors for the relationship between the usage of e-governance applications and Internet usage. In terms of our citizen-centric perspective, we focused on the university students in Turkey as a proportion of young population. University students are assumed to be an active population of society that realizes participation in the governing process using their ICT capacities. In our methodology, we defined our hypotheses and variables to determine the factors affecting students' Internet usage in the use of e-governance applications. We have collected data about students' socio-economic conditions, Internet usage abilities, Internet usage levels, Internet usage tendencies, offline participation, their opinions about technology and online security by our survey. We tested our hypotheses by means of appropriate statistical methods.

The results of the analysis of our hypotheses support our first hypothesis to a large extent. According to this result, socio-economic conditions have very limited effects on the students' Internet usage during use of the e-governance applications. We assumed that this situation is mainly related to the students' environment where resources are provided in university campus. We utilized this equalizing effect of university environments on the socio-economic conditions of students for illustrating other factors that may have effects on the students' Internet usage during the use of e-governance applications. This result is also important to define the responsibility of the management of universities providing rich resources to develop civic activities of students as citizens. According to this result, we can assume that higher education management should develop

a vision for providing resources to students. The second hypothesis of this study is that Internet usage abilities have effects on the students' Internet usage. We found that Internet usage abilities such as online activities and having social media accounts, which is the precondition of usage, are important factors for the usage of e-governance applications. However, their level of impact is not very powerful in contrary to our expectation. The third and fourth hypotheses of this study claim that the Internet usage level and the Internet usage tendencies have effects on the Internet usage of students. According to the results regarding these hypotheses, the aim of Internet usage, to increase accessibility to ICTs, extending time period as being online, promoting students' engagement in online discussions, and enhancing interaction have effects on the students' Internet usage during the use of e-governance applications. To support this process, universities and local governments can improve ICT usage with experiences like participatory budgeting. The results support the expectation of the sixth hypothesis of this study. Internet security is one of the important factors affecting the usage of students. Therefore, universities and municipalities can provide free software for students to have security during the use of Internet. Also, they can improve public forums where students can establish networks.

The results do not support the fifth and seventh hypotheses of this study. According to these hypotheses, offline participation and view on ICTs are claimed to be related with the ICT usage of students. However, in contrast to our hypothesis and literature, our findings present that offline participation does not affect the students' usage of ICTs during use of e-governance applications. These results can be explained with the sample of this study. Students are not so much interested in politics in Turkey. Students' view on ICTs has also no effect on the use of e-governance applications. This result may be explained by the students' condition that they are already active users of ICTs and there are not much cultural limits for technology in Turkish society. And lastly, the results show that e-governance and e-participation are also related to each other, but the degree of relation is not powerful. These relations mostly occur in local politics and participation on municipality level.

The analysis of this study presents the factors which have effects on students' online participation. According to the results of this study, it can be said that the improvement of citizens' usage abilities, usage level, usage tendencies, and Internet security will increase citizens' Internet usage during online participation and use of online governance applications. In this process, higher education institutions and local municipalities can take responsibilities. Supports in educational process and enhancing ICT opportunities in students' living environments will have positive effects on the development of students' political participation and the use of e-governance applications online. This study suggests that in order to increase students' usage capacities of e-governance applications, it is necessary to improve Internet security, provide secure tools to students for e-access, improve their Internet usage level and abilities in an integrated plan (such as how they can use it to develop NGOs, universities or with educational support), introduce e-governance and e-participation applications, and improve Internet security. These results indicate that the problems about implementation of governance principles and operational usage of ICT technologies should be overcome and accessibility to e-governance opportunities should be available to students.

Our results would pave the way for a more productive and innovative problem-solving approach regarding young peoples' participation. If we intend to improve information society in general *i*) basic computer literacy skills are needed; hence, these skills may be provided by municipal courses at the youngsters' local clubs in their districts; *ii*) there is a need for basic ICT infrastructure and access facilities, which could be local public kiosks run by municipalities in order to provide secure Internet and computer access services to the young local people; *iii*) units of public administration and public organizations should include improvement of e-security and e-safety among their basic duties; *iv*) municipalities may also try to motivate young people to connect, such as by rewarding them, calling for competitions on participatory ideas; *v*) universities could design a basic introduction course with 1 or 2 credits including computer literacy and e-participation through lectures or discussions of theory, limits, problems, solutions, and practice for better participation.

It can be suggested for the researchers in the field of e-governance that *i*) they should focus on citizen-centric evaluation of e-governance application for an efficient policy making; *ii*) they can extend Internet usage categories in relation to the factors effecting citizen's Internet usage in the process of e-participation and e-governance; *iii*) they can contribute to the literature by illustrating factors affecting the participation process of different citizen categories in a population; *iv*) researchers may follow basic dimensions of e-governance and e-participation in our research and the research agenda based on our research framework to test their validity in a wider scope of samples and public domain.

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