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Civic Engagement via E-Government Portals: Information, Transactions, and Policy-Making

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Chapter IX

Civic Engagement via E-Government Portals: Information, Transactions, and Policy Making*

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Abstract

This exploratory study examines civic engagement with e-government via Web sites. It provides an analytical framework that integrates both the supply and demand sides of citizen interaction with e-government. In modeling three dimensions of online civic engagement (government information access, service transactions, and contributing to government policy-making processes), the study framework incorporates a number of variables, including political activism, civic involvement, perceived benefits and difficulties, information channels, and demographic characteristics. Based on a national sample of Internet users, the study highlights the importance of the supply side (availability of e-government) for promoting civic engagement. Furthermore, political activism is found to be positively related to accessing gov-

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ernment policy information and contributing to policy-making processes. The study results also confirm the significant impact of perceived benefits in fostering online civic engagement. Future research can benefit from this study by utilizing a more comprehensive model, treating various dimensions of online engagement separately, and conducting an in-depth analysis of the elements of perceived benefits.

Introduction

Electronic government services have gradually evolved from simply providing information on Web portals to offering citizens opportunities to communicate and conduct online transactions. Engaging citizens online to improve governance and facilitate e-democracy remains one of the key challenges of the next generation of electronic government (Pratchett & Krimmer, 2005). Norris and Moon (2005) report, however, that there is little progress made at the local level in adopting interactive services (Norris & Moon, 2005). A study of local government officials also suggests that e-democracy is not high on their agenda for future deployment of electronic government (Norris, 2005). Surveys of government Web sites indicate that even, when available, interactive features to engage citizens in formulating public policy are rarely used (West, 2004). Although with the introduction of Internet technologies, governments are shifting away from the traditional bureaucratic paradigm, providing customer services rather than enhancing citizen participation in policy making remains the primary focus (Ho, 2002). This seems to be a missed opportunity when recent evidence has shown a positive link between visiting local government Web sites and trust in government (Tolbert & Mossberger, 2006).

Learning from experience and building on the information and communication infrastructure, government can introduce meaningful ways to engage citizens in the policy making process. One of the main criticisms of current e-government concerns the top-down bias impacting decisions on what type and nature of information and services are to be provided (McNeal, Tolbert, Mossberger, & Dotterweich, 2003). Thus, e-government tends to either ignore the citizen's perspective or misunderstand it. Moreover, existing scholarly literature on e-government seems to pay limited attention to the citizen's perspective. Studies of transparency (Pandey & Bretschneider, 1997), information and service delivery (Holden et al, 2003), online public involvement (Scott, 2006), and reforms (Ho, 2002) are mostly based on surveys of either government Web sites and/or government officials. Although some popular studies take a more citizen-centric approach in trying to understand the demand side (e.g., Graafland-Essers & Ettedgui, 2003; Horrigan, 2004), such studies have limited analytical methodologies for understanding the impact of individual factors. One exception is the investigation of the factors leading to e-government adoption by Carter and Belanger (2004), who tested the impact of several variables on intent to

adopt e-government services. However, using college students as the sample limits the generalizability of their findings. Finally, current e-government studies tend to ignore opportunities for integrating insights from relevant bodies of literature. For example, public administration and political science researchers often overlook literature on information management systems, and rarely integrate social and network dimensions into the study of e-government (Norris & Lloyd, 2004).

To fill these gaps in existing research, this book chapter proposes a framework that takes into account both the supply and demand sides of civic involvement in e-government. This study sheds light on how making online services available impacts the willingness of citizens to use e-government and their actual utilization of e-government information and services. Moreover, the study integrates insights from allied fields of research, examining the social aspects of civic engagement and analyzing the importance of information channels and perceived benefits of e-government services. Lastly, this study employs regression analysis to ascertain both the direction and significance of various factors impacting online civic engagement, thus moving beyond mere descriptive studies.

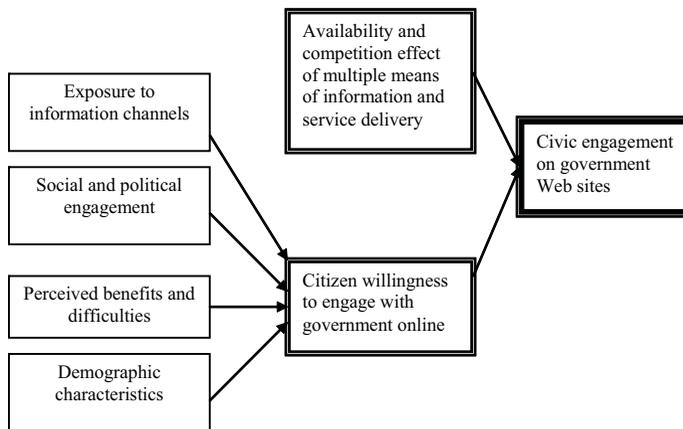
We begin by introducing the proposed analytical framework and formulating hypotheses based on relevant theoretical insights. Next, we discuss the models and measures used and explain the data collection and data analysis process. The discussion of the results includes theoretical and policy implications of the key findings. Finally, we conclude with a summary of the findings and suggestions for future research.

Analytical Framework

The proposed conceptual framework aims for comprehensiveness by addressing both the supply and demand sides of e-government as they impact the level of civic engagement. Supply side refers to the availability of e-government services. Demand side refers to citizen willingness to interact with government online. This supply-demand approach is analogous to Pippa Norris's (2005b) political market model. Graafland-Essers and Etedgui (2003) also provide some important insights into the dynamics of supply and demand. Supply and demand are seen as jointly determining the levels of engagement and satisfaction. The framework is illustrated in Figure 1.

The other main goal of the framework is to make a clear distinction between willingness to adopt and actual utilization of electronic government information and services. Willingness to adopt does not necessarily translate into actual adoption. It is particularly the case when the interactive features citizens may demand are not made available to them. As a result, the percentage of citizens using transactional services

Figure 1. A conceptual framework for online civic engagement



is relatively low. For example, online renewal of driver licenses and recreational licenses are at 12% and 4%, respectively (Larsen & Rainie, 2002, p. 3).

Several theoretical models are relevant for understanding how citizens behave when they interact with government online. The technology acceptance model (TAM) developed and modified by Davis (1986, 1989) and Venkatesh and Davis (2000) shows the importance of the perception of benefits and the perception of task complexity in determining the actual use of information technology. Roger's (2003) diffusion of innovations approach puts emphasis on how social systems impact diffusion and adoption decisions. These models are relevant because engaging government online can be conceptualized either as acceptance of new technology (i.e., Web-based technologies) or innovation adoption (using online functions as adopting innovation).

In a 2005 white paper, Titah and Barki offer a comprehensive review of literature on e-government adoption. They categorize all published articles on this topic into the following broad categories: (1) e-government "managerial practices" research; (2) e-government "organizational and individual characteristics" research; and (3) e-government "subculture" research. Our research fits well under the individual characteristics of e-government users category. Common theoretical approaches within this category of research are the TAM model and diffusion theory insights from which are used in our proposed model.

Literature on social capital also provides certain insights (Lin, 2001). Social capital is conducive to traditional civic engagement (Skocpol & Fiorina, 1999, p. 13) and it impacts cyber engagement as well (Brainard, 2003). Literature from mass commu-

nication also proves relevant, reinforcing the notion that initial exposure to multiple information and communication channels creates awareness and may lead to shifting opinions about an issue (Andreasen, 1995; Rice & Atkin, 2001). Individuals who are exposed to multiple information and communication channels are more likely to learn about innovations such as new e-government functions (Rogers, 2003; Whitehead, 2000). Reviewing e-government research, we can identify factors affecting the use of government Web sites, particularly demographic characteristics emphasized in studies on the “digital divide” (Mossberger, Tolbert, & Stansbury, 2003; Norris, 2005b). These studies also provide some potential classifications of dimensions of citizen online engagement (Ho, 2002; West, 2004).

Below, we incorporate these theoretical insights into the key components of the framework, while hypothesizing the relationships among the components. We shall begin by defining online civic engagement as the main dependent variable in the conceptual framework.

Defining Online Civic Engagement with Government

In a broad sense, civic engagement refers to “the participation of individual citizens in the association of civil and political society” (Brint & Levy, 1999, p. 164). The present study focuses on government Web sites as the vehicle for civic engagement. This approach complements, without duplicating, the efforts of political scientists to understand political mobilization via the Internet in elections.¹ This study aims to analyze the factors affecting the willingness and actual utilization of e-government services that help engage citizens in public governance. Thus, in this study, “civic engagement” is limited to interactions with government online via Web portals.

Further, this study draws from Ho’s (2002) scheme classifying various activities in online civic engagement. Ho (2002) argues that there is a hierarchy of activities. At the most basic level, citizens conduct passive search for government information, such as information on council meetings, community calendars, and schedules for rule making. This basic level of engagement is important because citizens can use the information as resources. Above this level of interaction, citizens conduct relevant transactions with the government by downloading forms, paying taxes, and so forth. At yet another higher level, citizens participate in government policy making by providing online comments and using other types of input mechanisms. At the highest level, according to Ho (2002), citizens participate in government in real-time.

The present study views such online activities as interlocked dimensions, not as a hierarchy of levels. Online transactions such as paying taxes and processing permits are rather different from getting public policy information and providing input. There is probably no hierarchical progression in such participation.

Nevertheless, we must make an important distinction, differentiating between the mere willingness to interact and the actual level of interaction with government online. This distinction may prove particularly critical when what government offers through their Web portals lags behind citizen demands and expectations.

Demographic Characteristics

Citizens who tend to interact with government online share several common demographic characteristics. First, users of government Web sites tend to be middle age (GAO, 2001; Horrigan, 2004; Thomas & Streib, 2003). Second, these users tend to be affluent, as evident in Internet voting patterns (Gibson, 2002), and as suggested by patterns in searches for government information and getting services online (GAO, 2001; Hart-Teeter, 2003; Horrigan, 2004; Mossberger et al., 2003). Third, education is positively correlated to sending comments to government (Larsen & Rainie, 2002, p. 16) and holding a positive view of engaging government via the Internet (Shelley, Trane, Shulman, Lang, Beiser, Larson, et al., 2004). A fourth factor involves race. Minorities are under-represented in Internet voting (Gibson, 2002) and they conduct less online searches for government information (Mossberger et al., 2003).

The relationships suggested by these studies are based on analyses of both Internet and non-Internet users. Following the insights of these studies, we formulate Hypothesis 1:

Hypothesis 1:

H1a: *A high level of education and income is positively related to engagement with government online.*

H1b: *Middle-age and nonminority citizens are more likely to exhibit willingness to interact with government online.*

It should be noted that the present study is focused on a broad set of factors determining online engagement with government and the inclusion of demographic characteristics is mostly for control. There is already extensive literature focusing on these variables. We will instead concentrate on less-researched, nondemographic factors.

Social and Political Involvement

All else being equal, one might expect politically active citizens to be more likely to engage government online. Indeed, there is positive correlation between Internet

use and political participation (Weber, Loumakis, & Bergman, 2003). Such political participation would include attending public meetings, writing letters to elected officials, and participating in political rallies and speeches (Weber et al., 2003, p. 32). Internet use includes surfing the Internet for recreation and accessing digital libraries, newspapers, and magazines, for example. Moreover, based on European Social Survey data, Pippa Norris (2005b) shows the importance of prior political orientation in shaping the demand for electronic information on government and politics. Dimitrova and Chen (2006) also found that prior interest in government is a significant predictor of e-government adoption. Thus, we can expect that a citizen who is more active in politics is more likely to engage government online.

Hypothesis 2: *A higher level of political activism is positively related to engagement with government online.*

In addition to political activism, community involvement is also likely to be positively associated with engaging government online. Community involvement refers the level of citizen participation in community groups such as church or school organizations. A relationship between community involvement and online engagement with government probably stems from two complementary factors: the positive role of social influence in shaping innovation adoption decisions (Lin, 2003; Lynch, Kent, & Srinivasan, 2001; Rogers, 2003), and the need for involved citizens to engage government to foster communities. In terms of the first factor, when citizens are active in a community, they are more likely to be exposed to innovative ideas, or are more likely to be innovators themselves. As a result, these community activists are more likely to utilize online information and services that help further build a sense of community. For instance, the electronic village at Blacksburg, Virginia, has seen church groups and clubs actively utilize the online community network to facilitate communication and collaboration with their existing and potential members (Carrroll & Rosson, 1996).

In terms of the second factor, engaging government to foster community may include, for example, applying for a community development grant to construct a community center, or participating in public meetings. Online networks can further facilitate citizens' involvement in discussing about and mobilizing around community issues (Rogers, Collins-Jarvis, & Schmitz, 1994). The use of the Public Electronic Network (PEN), an interactive communication system, in Santa Monica facilitates the involvement of disadvantaged segments of population (i.e., the homeless) in deliberation of public policy. The experience of PEN demonstrates the association between community involvement and the use of online government services. As government puts more and more information and services online, the citizens with high community involvement will be more likely to access these services. Hence, we arrive at Hypothesis 3.

Hypothesis 3: *A higher level of community involvement is positively related to engagement with government online.*

Information Channels

One basic theme of electronic government is the utilization of information and communication channels. As posited by the literature on innovation diffusion, early adopters of innovations tend to utilize more information channels than nonadopters (Rogers, 2003). Mass media channels are particularly important in creating awareness of new services such as e-government transactions (Andreasen, 1995; Rice & Atkin, 2001). These channels include newspapers, TV, radios, billboards, printed materials such as government newsletters, electronic mails, and Web sites. An individual who utilizes many channels of communication is probably more likely to use government Web portals. Mass media information channels are effective not only in creating awareness, but also in changing the attitudes of potential adopters (ITPC, 2002; Whitehead, 2000).

Existing e-government research neglects to assess the relationship between the use of multiple information and communication channels and the propensity for engaging government online. Diffusion literature shows that individuals with a high level of utilization are more likely to receive information about e-government information and service offerings (Andreasen, 1995; Rogers, 2003). As a result, we expect that those who are exposed to multiple information and communication channels would be more likely to show a willingness to engage government online.

Hypothesis 4: *High level utilization of information channels is positively related to engagement with government online.*

Perceived Usefulness and Complexity

Perceived usefulness is important for the adoption of new technologies. Based on the technology acceptance model (TAM) (Davis, 1986, 1989; Venkatesh & Davis, 2000), perceived usefulness is empirically asserted to be an important determinant of adoption. Perceived usefulness refers to “the extent to which a person believes that using the system will enhance his or her job performance” (Venkatesh & Davis, 2000, p. 187).

Perceived usefulness is a concept broad enough that it can be applied to citizen interaction with government. Nedovic-Budic and Godschalk (1996), utilizing TAM, studied the willingness to adopt geographic information systems at government agencies. For individuals, perceived usefulness in comparison with the old system

is an important factor in their willingness to use that system. Perceived benefits could include improvement in job performance and convenience. Extending the argument to the context of online civic engagement, perceived usefulness refers to the belief that interacting with government online benefits participating citizens. These benefits may include the convenience of no waiting in line, avoidance of mail delay, and the convenience of accessing information and services 24/7. If citizens believe they could benefit significantly from obtaining online information or from conducting online transactions on government Web sites, they would more likely to use them. Therefore, we expect that perceived usefulness is positively associated with willingness to interact with government online.

Hypothesis 5: *Perceived usefulness is positively related to engagement with government online.*

On the other hand, perceived problems are likely to reduce the willingness of citizens to interact with government online. Individuals may lack the needed comfort level to conduct online transactions. This may stem from personal attitudes or beliefs (Lin, 2003; Ajzen & Fishbein, 1980). For example, citizens may not wish to conduct transactions with government because of a lack of trust due to perceived security problems or privacy concerns. Moreover, it may stem from the lack of technological expertise, or perceptions of low self-efficacy (Bandura, 1997).

Technical expertise of individuals shapes their perception of the severity of the problems and difficulties associated with adopting a new piece of technology. Northrop, Dunkle, Kraemer, and King (1994) show that people's computer background affects their use of a computer. If software is easy-to-use, users are more likely to adopt the application. Previous computer experience and exposure to technology are also favorable conditions for individual adoption of geographic information systems in a local government (Nedovic-Budick & Godshalk, 1996).

In terms of engaging government online, there are several sources of potential problems, such as, the quality and accessibility of information (Horrigan, 2004), and privacy and security (West, 2004). Usability issues such as navigation and help functions are also critical for the use of e-government services, particularly online transactions (Barnes & Vigden, 2007). These can be seen as barriers to using e-government information and services. In sum, citizens would be less willing to engage government online if they perceive problems.

Hypothesis 6: *Perceptions of problems with e-government information and services are negatively associated with engaging government online.*

Availability and Competition Effects

Availability of government information and services is likely to shape the extent to which citizens engage government online. At the local level, e-government Web sites are still mostly focused on information (Norris & Moon, 2005). Online transactions are rather rare. There are limited interactive services on government Web sites (Hart-Teeter, 2003; Thomas & Streib, 2003). Even the creators of government Web portals do not perceive the portals as a vehicle for interaction and transactions with government but simply as a channel for information delivery (Norris, 2005a). As for specific interactive features, about 15% of Web sites offer areas for posting comments or complaints (West, 2004). About 7% of Web sites offer broadcasting of government events, and about 1% of Web sites offer personalized information gathering targeted directly to the attention of the citizen (West, 2004). Thus, it is important to qualify the limited use of interactive functions according to actual availability.

Availability is the first barrier to actual utilization of government information and interactive services. However, availability is also a matter of awareness. If the user is not aware of the services, the user cannot utilize them. Some government officials have admitted that making the public aware of available services is sometimes a challenging task. We can expect that perceived availability is positively associated with the actual online engagement with governments.

Hypothesis 7: *Awareness of information and service availability is positively related to engagement with government online.*

Engaging government online should be put in its proper context. Online engagement is only one of several ways for citizens to interact with government. Citizens can visit government offices in person. They also have the option of writing letters or making phone calls. A 2003 national survey has shown that citizens still interact with government via traditional channels (Horrigan, 2004). When survey respondents were asked to rank methods of interaction, communication by telephone ranked the highest (42%) among other options such as Web site visit, in-person visit, e-mail correspondence, and letter writing. The use of government Web sites ranked second (29%). Nevertheless, in-person visits and e-mail correspondence remained viable options (20% and 18%, respectively). We will use willingness to engage government via traditional channels as a control.

Methods and Data

Models and Measures

This study analyzes three dimensions of citizen engagement with government online: accessing information, conducting transactions, or providing public policy input. Each of the hypotheses proposed in the conceptual framework will be tested against these three dimensions. Further, each dimension will then be tested in two models, using willingness and actual utilization to differentiate between intentions and use of e-government information and services. As a result, we have six models: the first three models capture willingness to engage with e-government and the next three models capture actual engagement with government online (See Table 1).

Willingness is measured by a scale-based query. Respondents are asked to rate the extent to which they agree with a statement, using a scale of “strongly disagree” (value=1) to “strongly agree” (value=5).² For the context of accessing information, the survey statement reads, “I would like to search for information on government Web site.” For the context of conducting transactions and providing public policy input, the survey statement will begin similarly with the phrase of “I would like to,” but each statement uses a different inserted phrase, such as “conduct transactions with government agencies online,” or “participate in government policy making by providing my opinions and comments online.”

Table 1. Operationalization of citizen online engagement with government

<i>Dimensions of Online Engagement</i>	<i>Matched Survey Items</i>
Getting government information online	A summation of scores for the following five survey items on the question “how often you look for the following information on government web sites” (Scale of 1-5; 1=never, 5=very often): (a) Look up contact information (e-mail, phone number) for government offices or officials; (b) Seek information about public policies or issues (environment, safety, etc.); (c) Get information about elections or voting; (d) Get information about public hearings or other policy forums; and (e) Get information about the impact of government decisions on your community.
Conducting transactions with government online	A summation of scores for the following three survey items on the question “how often you conduct the following activities on government web sites” (Scale of 1-5; 1=never, 5=very often): (a) File taxes (state or federal income taxes); (b) Purchase or renew licenses (driver’s, business, hunting, fishing, and other licenses); and (c) Pay bills or tickets (i.e., utility bills, parking tickets).
Providing public policy input to government online	A summation of scores for the following four survey items on the question “how often you conduct the following activities on government web sites” (Scale of 1-5; 1=never, 5=very often): (a) Give comments to government officials; (b) Express a position on a government policy or initiative online; (c) Submit information to assist in ensuring public safety, protecting the environment, and so forth; and (d) File complaints.

The degree of engagement is measured by a score which evaluates both the number of activities and their intensity. For example, for the public policy input variable, this question is posed, "How often do you conduct the following activities on government Web sites: (a) give comments to government officials, (b) express a position on a government policy or initiative online, (c) submit information to assist in ensuring public safety, protecting the environment, and so forth, and (d) file complaints." Each activity is measured on a scale of 1-5 (1=never, 5=very often), and the total sum is the measurement of degree of engagement. Table 1 provides more details about the other two dependent variables.

The key independent variables identified in the conceptual framework and their measures are presented in Table 2. The measure of "political involvement" focuses on both willingness and actual action. "Community involvement" is a measure of the extent to which a citizen is involved in the community, including number of memberships in various organizations such as fraternities, labor unions, and youth groups. The questions are modeled after the U.S. General Social Survey to ensure comprehensiveness in naming community groups and to take into account intensity of involvement. The "utilization of information channels" construct is specific to learning about information and services accessible on government Web sites. This degree of specificity will let us pinpoint the government Web site activities as the foci of the framework.

The "perceived difficulties" construct measures the degree of perceived obstruction preventing online interaction with the government, as identified by the respondents. Similarly, the "perceived benefits" construct is specific to each dimension of civic engagement. This level of specificity matches the three dimensions of civic engagement. Likewise, the "availability" construct is specific to each dimension of civic engagement and each is measured according to the rating of availability of specific online activities on a scale of 1-5. The "competition" construct captures the competition effect of alternative channels of communication (such as personal visits to government offices or writing letters). This is a composite index, which takes into account use and level of satisfaction; both are critical factors in choosing one channel of communication over another. Standard demographic variables are used for control. Operationalization of each variable is in Table 2.

Research Design and Data Collection

The target population of this study was Internet users in the United States. The unit of analysis was the individual Internet user. We designed and implemented a two-stage data collection to achieve a sample of these Internet users and to collect relevant data on the conceptual constructs operationalized in Tables 1 and 2. Since our target population was Internet users, we felt that it is reasonable to reach respondents via the Internet. Moreover, despite their shortcomings, Internet surveys have become

Table 2. Conceptual constructs of determinants for engaging government online and their measures

Conceptual Constructs	Survey Items and Operationalization
Political Involvement	A summation of scores for the following two survey items on the question “how much you agree or disagree with the statement” (Scale of 1-5, 1 “strongly disagree” and 5 is “strongly agree”): (a) I am interested in politics and (b) I am active in lobbying, elections, and other political activities.
Community Involvement	The product of the total number of membership in the community and the level of activity. Total number of membership include those in the following 15 types of organizations: fraternal group, service group, veterans group, political club, labor union, sports club, youth group, school organization (PTA), hobby club, school fraternity/sorority, nationality group, farm organization, literary or arts group, professional society, and church organization. The level of activities is measured at the scale of 1-5 where 5 means “Very active” and 1 means “Very inactive.”
Utilization of Information Channels	A count of the number of information channels being utilized to learn about the information and services provided on government Web sites. The list of channels include: newspaper advertisement, TV advertisement, radio advertisement, billboard, printed materials from government (newsletter, payment notice, postcard, etc.), e-mail, ad on a search engine (e.g., Google or Yahoo), online advertisement on a general Web site, online advertisement on a government Web site, and mobile advertisement (e.g., putting the government URL on a license plate).
Perceived Benefits	This is a rating of the following statements (scale of 1-5, 5 means “strongly agree” and 1 means “strongly disagree”). For information related models (Models 1 and 4), the rating for Question (a) is used. For online transaction models (Model 2 and 5), the rating for Question (b) is used. For public policy input, Question (c) is used. Question (a): I could benefit significantly from obtaining online information from government Web sites. Question (b): I could benefit significantly from conducting online transactions with government Web sites. Question (c): I could benefit significantly from submitting my opinions or comments on public policy issues online at government Web sites.
Perceived difficulties	A count of the number of the following barriers identified by the respondent: quality of information, accessibility of information, privacy, security (e.g., identity theft), too hard to obtain information, no person-to-person contact, and difficult to follow online instructions.
Availability and Competition	
Availability	This is a rating of the availability of the information and services relevant to a particular dimension of online engagement (scale of 0-4, 4 means “always available” and 0 means “not available”). For information related models (Models 1 and 4), the score is the rating of availability of public information such as recreation, businesses, health, and business opportunities. For online transaction models (Models 2 and 5), the score is the rating of availability of transactions with government agencies, such as paying taxes, getting driver or professional licenses, and getting permits. For public policy input models (Models 3 and 6), the score is the rating of the availability of online features to voice your opinion on public policy.

continued on following page

Table 2. continued

Competition Ranking	This is the ranking of various channels that citizens can use to interact with government. These channels include: (a) in person, (b) letter, (c) telephone, (d) e-mail, and (e) government Web site. The ranking is based on a composite index of frequency of use and satisfaction. A ranking score of 5 means the best option and a score of 1 means the least preferred option.
Demographics	
Income Level	This is done through ranking. 1. Below \$20,000; 2. \$20,000 - \$29,999; 3. \$30,000 - \$39,999; 4. \$40,000 - \$49,999; 5. \$50,000 - \$59,999; 6. \$60,000 - \$74,999; 7. \$75,000 - \$99,999; 8. \$100,000 - \$149,999; and 9. over \$150,000
Race	1= Caucasian and 0= other
Gender	1= male and 0= female
Age	Actual age at the time of the survey
Level of Education	This is done through ranking. 1. Completed some high school; 2. High school graduate; 3. Completed some college; 4. College degree; 5. Completed some postgraduate; 6. Master's degree; and 7. Doctorate, law or professional degree

an established data collection method and are considered a viable alternative to traditional survey methods (Dillman, 2000; Schonlau, Fricker, & Elliott, 2001).

We took several precautions in order to avoid the common pitfalls of Internet surveys, such as lack of control over the number of times an individual can take the survey, whether the survey respondent is a legitimate individual, and the overall quality of responses. First, we worked with a professional survey company, Survey Sampling International (SSI), Inc., to generate a panel of legitimate U.S. Internet users for the survey. Each person in the panel had to be registered with the survey company. We further employed commercial online survey software called *Opinio* to restrict the same individual from taking the survey twice based on their IP address. Further, the quality of responses was carefully assessed based on the time used to fill out the survey, the required fields, and demographic data from the survey company to validate with the same information collection through our online survey. Despite these efforts, it is important to recognize that online surveys, similarly to traditional surveys, are subject to nonresponse error (i.e., potential bias in the data if the non-respondents are significantly different from those who completed the survey).

A total of 5,000 survey invitations were sent out via e-mail by SSI on July 11, 2004, and the first stage of data collection ended within 10 days. This yielded 447 valid responses leading to a response rate of 9%, which is comparable with similar Web surveys (e.g., Comley, 1996; Smith, 1997). We achieved two objectives at the first stage. First, we collected additional demographic information such as race, age, income, and education to include in the data analysis. Second, we were able to identify those individuals who had previous experience with using online government information and services. At the second stage, we contacted those individuals

to ask more detailed questions about their online civic engagement. The survey invitations were sent out on February 1, 2005. Two e-mail reminders were sent out on February 7 and 10, 2005. A total of 143 valid responses were generated at this stage, which translates into a response rate of approximately 3%. These responses form the basis of our analysis.

Data Analysis

The first analysis we conducted was to assess the extent to which the resulting sample after the two-stage of data collection is representative of the U.S. Internet user population. We benchmarked our sample against a national random sample of U.S. population obtained via the Pew Internet and American Life Project (2004), which included 2,925 Americans age 18 and over. For the comparison of demographic characteristics between our sample and the Pew sample, we included only those Pew respondents who had access to the Internet. This yielded a sample of Internet users (n=1,899). Given the random sampling used, the Internet user sample from the Pew study should be representative of the national Internet user population and can serve as a benchmark.

As Table 3 shows, we achieved representative sample of Internet user population by matching our sample to that of the Pew study. In particular, we match gender and age breakdowns of the Pew sample. Table 3 includes the percent distribution of the sample respondents that belong to various combinations of gender and age groups before and after weighting. For example, 9% of the sample respondents

Table 3. Age group breakdown by gender for creating a weighted sample to match pew data on Internet users

	<i>Sample Distribution</i>		<i>Pew Data</i>		<i>Sample Distribution</i>		<i>Pew Data</i>
	<i>Before Weighting</i>	<i>After Weighting</i>			<i>Before Weighting</i>	<i>After Weighting</i>	
Female				Male			
18-24	3%	6%	6%	18-24	1%	8%	8%
25-34	17%	10%	10%	25-34	2%	10%	10%
35-44	9%	13%	13%	35-44	7%	11%	11%
45-54	20%	11%	11%	45-54	9%	10%	10%
55-64	10%	7%	7%	55-64	15%	7%	7%
65+	3%	3%	3%	65+	6%	4%	4%
		50%	50%			50%	50%

Table 4. Models of various dimensions of engaging citizens online with government

Model #	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Dependent Variable	<i>Willingness</i>			<i>Actual Utilization</i>		
	Public Info. Search	Online transactions	Public Policy Input	Public Info. Search	Online Transactions	Public Policy Input
Independent Variables						
Constant	1.717 (.427)	0.205 (.457)	0.578 (.427)	4.321* (1.944)	1.882 (1.607)	0.521 (1.496)
Political Involvement	0.080** (.032)	0.043 (.038)	0.131* (.038)	0.612*** (.147)	-0.173 (.133)	0.247 (.135)
Community Involvement	-0.015 (.010)	-0.019 (.011)	-0.015 (.011)	-0.037 (.044)	0.030 (.039)	0.099* (.039)
Utilization of Information Channels	0.007 (.039)	0.047 (.044)	0.009 (.044)	0.536** (.178)	0.127 (.156)	0.177 (.155)
Perceived Benefits	0.574*** (.082)	0.762*** (.075)	0.518*** (.080)	0.805* (.371)	1.242*** (.264)	0.568* (.279)
Perceived Difficulties	-0.029 (.041)	-0.034 (.044)	0.157*** (.045)	0.004 (.185)	-0.154 (.156)	0.049 (.157)
Availability and Competition						
Availability	-0.053 (.084)	-0.039 (.071)	0.156* (.079)	0.372 (.385)	1.120*** (.250)	0.559* (.276)
Competition	0.059*** (.016)	0.024 (.018)	0.027 (.017)	0.273*** (.074)	0.116 (.063)	0.154* (.061)
Demographics						
Income level	-0.016 (.029)	0.081* (.033)	0.045 (.032)	0.040 (.133)	0.130 (.115)	0.116 (.112)
Race (White vs. non-white)	0.372 (.223)	0.333 (.252)	-0.107 (.248)	0.136 (1.014)	-0.023 (.888)	-1.387 (.870)
Gender	0.288* (.141)	0.102 (.156)	-0.002 (.161)	-0.586 (.641)	1.057 (.549)	0.632 (.563)
Age	-0.013** (.005)	-0.003 (.005)	0.002 (.005)	-0.048* (.022)	-0.025 (.019)	0.032 (.019)
Education Level	-0.059 (.049)	0.006 (.056)	-0.099 (.054)	-0.089 (.222)	-0.447* (.196)	-0.288 (.191)
Model Fit						
R-Square	0.587	0.585	0.591	0.470	0.423	0.437
Adjusted R-Square	0.549	0.547	0.553	0.421	0.370	0.385

*, ** and *** denotes a coefficient significant at the .05, .01, and .001 level, respectively.

belong to the female, 35-44 age group before weighting, as opposed to 13% after weighting. After weighting (see “after weighting” and “Pew” columns), the sample distribution becomes representative of Pew data on Internet users for each gender and age combination.

Nonetheless, we recognize that our small sample size as well as sampling process may introduce some biases. Even after weighting according to age groups and gender, the sample data may not be able to achieve full representation on all demographic characteristics. As a result, this study should be viewed as exploratory in nature and generalization of the findings to all Internet users should be treated with caution.

We then employed OLS regression analysis to test the hypotheses generated in the analytical framework for three dimensions of online civic engagement both in terms of willingness and actual utilization. To address potential multicollinearity problems, we have run collinearity diagnosis for all models. Since all tolerance collinearity statistics are above 0.5, we concluded that multicollinearity is not an issue.³ Multivariable regression analysis allows us to assess the significance as well as the direction of each hypothesized relationship. Thus, we are able to identify the independent effect of factors such as political involvement while controlling for age, education, and other demographics.

Results and Discussions

The study results are summarized in six regression models presented in Table 4. The first three focus on willingness and the remaining three capture actual engagement with e-government. Model 1 examines the influence of political involvement, community involvement, information channels, perceived benefits, perceived difficulties, and demographic characteristics on the willingness to conduct information searches on government Web portals (See Table 4). Models 2 and 3 measure the influence of the same variables on willingness to conduct online transactions and willingness to provide public policy input, respectively.

Model 4 measures the effects of political involvement, community involvement, information channels, perceived benefits, perceived difficulties, demographic characteristics, availability, and competition from off-line government services on actual utilization of government Web portals for information searches. Models 5 and 6 measure the effects of the same set of variables on actual utilization of online transactions and providing public policy input, respectively. The adjusted R-squares show substantial explanatory power for each of the six models. The following discussions present the general patterns observed in all six models and their theoretical and policy implications.

Engaging Government Online is a Multi-faceted Phenomenon

The first important finding suggests that engaging citizens with government online is a multifaceted phenomenon. Each dimension of engagement has its own dynamics. In particular, engaging citizens in online transactions with government (such as paying taxes) differs from citizens accessing online information and providing input on public policy. Political involvement as measured by interest and level of activities in politics is not significantly associated with transactions (see Models 2 and 5). On the other hand, political involvement is strongly associated with both the willingness and actual online engagement with government to access public policy information and provide input (see Models 1, 3, and 4).

This finding has both theoretical and policy implications. First, it seems important to differentiate between these two activities. Public administrators should examine how political involvement may create two different kinds of groups who interact with government online. Different strategies may need to be employed for promoting engagement when the target groups of online transactions and participatory governance differ.

Availability is Critical in Determining Utilization

The results also confirm the importance of availability, particularly for online transactions and interactive public policy input. For online transactions (see Model 5), perceived availability is significantly and positively associated with actual transactions (e.g., e-filing, purchasing or renewing licenses, paying bills or penalties, etc.). Similarly, perceived availability is significantly and positively associated with providing public policy input to government online in terms of both willingness and actual utilization (e.g., expressing a position on a government policy or initiative, submitting information to assist in ensuring public safety and protection of the environment, etc.) (see Models 4 and 6).

The significance of availability as an independent determining factor is particularly notable when all other factors are taken into account. Perceived availability, although positively related to accessing government information online, is not significant. Perhaps, governments are already doing a fair job in providing some important information online. Thus, in this specific case, availability seems to no longer be an issue.

The question of availability is critical in understanding both the supply and demand for e-government Web sites. Future researchers should consider treating supply and demand simultaneously rather than looking at supply or demand individually.

If public administrators want to improve their e-government efforts, perhaps they may need to better communicate the availability of such services.

Availability is an important prerequisite for citizens to utilize e-government services. Another key consideration is perception. Governments are sometimes being criticized for not being particularly effective in marketing their services. At times, transactions and options are available online but citizens are not aware of them. Governments need to consider using information channels more effectively to address the gap between the perception and reality of availability.

Perceived Benefits Are Conducive to Online Engagement

Perceived benefits are a critical factor in determining the willingness and utilization of e-government. This is the only factor that shows consistent significance in all six models. In almost all models, this factor has the highest level of significance compared to other variables. The results show that the more benefits citizens perceive, the more likely they will interact with government online.

The importance of perceived benefits lends support to the technology acceptance model (TAM). This seems to be a major factor in the adoption of new e-government information access and services. When the transaction involves obtaining permits or filing taxes, the perceived benefits may be convenience or a monetary advantage. For engaging citizens in public policy discussions, government must show how such discussions have a bearing on the content and direction of final policy decisions. Otherwise, citizens will not see any benefit in providing policy input and they would simply stop participating.

Political Activism Drives Online Public-Policy Engagement

Political activism emerges as a significant predictor for seeking policy information and engaging in public governance online (Models 1, 3, and 4). The relationship is positive. In contrast, for conducting online business transactions, political activism has no significant bearing (Models 2 and 5). An interpretation of these findings may be offered: political activism gives citizens the basic motivation for seeking public policy information and engaging government in public policy issues. Government Web sites provide new ways for doing so. In comparison, community involvement does not establish itself as a significant motivation for engaging government online. Having more and active membership in community organizations such as PTAs, hobby clubs, service groups, and so forth, does not show any significant relationship with engaging government online, with the only exception of utilizing online mechanisms to give comments to government. This suggests that membership in

community groups, while controlling for other factors, only plays a role in giving government comments online.

The finding puts political activism at center stage, suggesting that interest in politics as well as actual participation in election and lobbying activities play a much more important role than general community involvement. Social capital as defined by community involvement in general does not translate directly into online civic engagement. Government Web sites seem to serve more as extensions of traditional methods of political participation rather than extensions of community building. If government aims to foster online public policy discussions, one important way is to augment political activities with electronic options.

Demographic Characteristics of Internet Users Have Limited Relevance

Our findings show that demographic characteristics play a limited role in determining willingness or actual utilization of online civic engagement options. When other factors are taken into account, income level does not impact searching for online government information or providing online input into policy. Age plays a role only in information searches but not in transactions or public policy input. Level of education plays a role only in conducting online transactions, but not in any other online activities. These findings suggest that, for our sample of Internet users, demographic characteristics have rather limited influence on user willingness and actual engagement with e-government.

Treating age, gender, race, and income level as controls, the findings demonstrated that those citizens who are politically involved off-line and perceive e-government as personally beneficial are more likely to use online government. This finding should be interpreted with caution, however, since it cannot be generalized to the general population. Our sample was limited to computer users who have access to the Internet already; in other words, higher income people who are not representative of the population at large. One possible explanation is that once a citizen has become part of the online community, factors such as perceived benefits and political activism seem to play important roles. At the same time, demographic characteristics become less significant.

Conclusion

Titah and Barki (2005) contend that despite the large amount of research on e-government, the field lacks a unified theoretical framework. One of the contributions of

our study is the identification of specific variables that may facilitate or impede the adoption of e-government information and services. Our findings also provide an important step in understanding the supply and demand sides of online civic engagement. The proposed framework incorporates both the availability and competition effects of various communication channels, aiming to provide a more comprehensive view of online civic engagement. The framework combines several dimensions of online engagement, such as, e-government information searches, online business transactions, and contributing public policy input. The study is limited by the small sample size and its focus only on Internet users.

This study nevertheless highlights the importance of several key factors in explaining both the willingness and actual utilization of various online civic engagement options. Perceived benefits seem to be a key factor in explaining the intensity of online civic engagement. This validates the relevance of the technology acceptance model. In terms of policy recommendations, public managers need to have a better understanding of the specific kinds of benefits that citizens want.

Political involvement off-line emerged as a critical factor in explaining why citizens seek public policy information and provide public policy input online. In comparison, general community involvement does not play as significant a role as originally expected. E-government efforts need to take this into consideration to effectively engage citizens online.

Finally, perceived availability of e-government services seems to encourage citizens to interact with government online. Government can bridge the availability gap by providing more online business transactions and more opportunities for online public policy input. In addition, it is important to note that availability becomes less of a factor for engagement when sufficient amounts of information and types of services are made available.

Future research can build on the conceptual framework proposed in this study, which integrates insights from various fields. One fruitful area of research will be to explore the various elements that constitute perceived benefits. When governments learn from citizens, realizing that the connection between policy input and final policy decision is the most important element, governments will need to make that link a priority and communicate this to its citizens. Another avenue for future research is to differentiate between the three levels of government and test the models with longitudinal data to see how perceived availability shapes actual utilization over time. This approach will provide insights into the evolution and dynamics of supply and demand as they impact online civic engagement.

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Endnotes

- ¹ For an illustrative example, see Brainard et al., 2003.
- ² The online survey did not differentiate between the three levels of government.
- ³ The tolerance statistics are in the range of .5 and 1.0. They are well above .2, a number below which would indicate a potential problem (Menard, 1995).