

Functions of E-Government: A Study of Municipal Practices

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BROADLY DEFINED, electronic government (e-government) is the use of information and communication technologies by government. E-government is part of a bigger movement toward public-sector reform, which is driven by technology and information systems. Technology has the potential to take government in new directions and transform governance (Mälkiä, Anttiroiko, and Savolainen 2004), and many examples continue to arise reflecting this transformation. The majority of e-government research has focused on highly populated municipalities and practices at the state and federal levels. The findings of the study presented here contribute to the research on e-government by highlighting the practices and trends in municipalities with populations of fewer than 50,000 residents. A 2005 survey of New Jersey municipalities was conducted to identify e-government practices and chief administrative officers' perceptions of the use of technology within a framework of four distinct functions of e-government: e-organization, e-services, e-partnering, and e-democracy.

Defining E-Government

E-government is a concept that was introduced into public administration in the 1990s,

but it has yet to be clearly defined and grasped by practitioners (Moon 2002). However, distinct functions of e-government have been identified in the literature. The Working Group on E-government in the Developing World (2002, 8) argues that the broad e-government vision stems from societal concerns, with priority areas depending “upon the specific conditions and ambitions of a society.” Moreover, the group suggests that the main goal of e-government needs to be citizen centered. Pascual (2003, 5) proposes a more narrow definition: that e-government aims to enhance access and delivery of government services to benefit citizens while strengthening government’s drive toward effective governance and increased transparency. More recently, Melitski (2004, 652) has broadened the definition: “e-government consists of Internet-driven innovations that improve citizen access to government information . . . services and ultimately equitable participation in government.” This study focuses on the use of technology, primarily the Internet, within the context of e-government.

The various definitions of e-government are reflective of the numerous functions and possibilities that technology affords governments. Graafland-Essers and Eteddgui (2003) divide e-government into three different op-

erating levels: government to citizen, government to business, and government to government. Moon (2002, 425) highlights four distinct criteria of e-government: (1) a secure government intranet for more efficient interaction among governmental agencies, (2) Web-based service delivery, (3) e-commerce for more efficient government transaction activities, and (4) digital democracy for more transparent accountability of government. Pascual (2003) outlines four client groups who are served by e-government: citizens, the business community, government employees, and government agencies. E-government services are described as government to citizen, government to business, government to employee, and government to government. However, unlike Moon, Pascual does not include a digital democracy component in her framework.

These approaches toward conceptualizing e-government are used here as the basis for a framework of four distinct functions:

1. E-organization: internal government efficiency and effectiveness
2. E-services: external efficiency and effectiveness in providing services
3. E-partnering: external efficiency and effectiveness in working with public and private organizations
4. E-democracy: citizen participation in government decision-making.

Functions of E-Government

E-Organization

The first function of e-government is electronic organization (e-organization). Although each of e-government's functions can exist simultaneously and are not necessarily associated with progressive stages, e-organization is one of the first steps in developing e-government. E-organization is defined here as the use of technology such as e-mail and intranets for internal government efficiency and effectiveness. It also refers to the integration

of technologies for horizontal and vertical communication between agencies and departments via the Internet. Fountain (2001, 62) argues that the use of the Internet within the bureaucracy leads to greater rationalization, standardization, and use of rule-based systems. Heeks (1999, 34) states that the "computerization of the public service is expected to improve state capacity by making up for deficiencies in bureaucratic analyses, curtailing drag and red tape, promoting unbiased treatment in the bureaucracy's dealing with the public, ensuring accountability, injecting speed into operations, generating necessary and accurate data, and curtailing corruption through proper record keeping."

Various aspects of e-organization have been identified. Early developments made it possible for municipal records to be maintained via computer, pay dates and holiday information to be made available online, e-mail communication to be utilized, and government employees to have municipal e-mail accounts. With more recent advances, requests by employees for benefits statements can be made online, worker hours can be processed online, and state and federal departments can access municipal information via the Internet. E-organization affects both intra- and inter-governmental interactions, ultimately enhancing the services government can provide to citizens and business.

E-Services

The second function of e-government is electronic services (e-services). E-services is the most recognizable as it directly affects the greater population. E-services is defined here as the use of technology for external government efficiency and effectiveness in providing services. Cloete (2003) argues that, in order for good governance to be achieved, there has to be an acceptance of technological service-delivery applications. A 2003 survey by the Pew Internet & American Life Project found that e-government tools are increasingly popular among Internet users, their primary purpose being to allow users to obtain information

and communicate with government officials (Horrigan 2004). However, West (2004, 16) argues that e-government “has fallen short of its potential to transform government” in the area of service delivery.

Various aspects of e-services have been identified. Early developments made it possible for policy and regulation information to be posted online, downloadable government forms to be made available through municipal Web sites, and information to be requested via e-mail or by completing online forms. Through later advances, it is now possible for citizens and/or businesses to apply for permits or licenses online, geographical information systems (GIS) capabilities to be provided online, municipal taxes to be paid online, and violations to be reported and complaints submitted online. E-services is an area that has received increasing attention. More resources from municipal governments have been directed to improving e-services due in large part to citizens’ expectations that government Web sites should perform as well as commercial ones.

E-Partnering

E-partnering, the third function of e-government, is probably the most overlooked in the context of e-government because it takes place outside the purview of the public. E-partnering is defined here as the use of technology for external government efficiency and effectiveness in working with public and private organizations, including businesses, other municipalities (horizontal relationships), schools, hospitals, and public and nonprofit entities. Whereas e-services include the general provision of services to external organizations such as businesses, e-partnering focuses on the working relationships between municipalities and external organizations. These relationships would require off-line dialogue to optimize the practice of the online relationship. E-partnering case studies in the use of technology in conducting government affairs have been well documented (Abramson and

Means 2001). In the case of the private sector, businesses that are engaged in an effective e-partnership rate highly the convenience associated with e-government (Graafland-Essers and Eteddgui 2003). Accenture (2004, 4) asserts that the relationship with business is stronger because “so many of businesses’ interactions with government are routine and high volume,” allowing for a smoother e-government transition.

E-government research has focused on the opportunities and challenges for partnering with businesses (Abramson and Harris 2003; Corbitt and Al-Qirim 2004). Devadoss, Pan, and Huang (2002) highlight how Singapore has begun an initiative, Government Electronic Business, to develop an e-procurement system. This system serves 150 agencies and has streamlined Singapore’s procurement system. Pascual (2003) suggests that e-procurement can open new markets to local businesses by opening up the government process while making it more competitive and fair.

Opportunities for advanced developments in e-partnering also exist in the academic realm. Educational institutions, loan companies, and students all contribute to e-partnering, especially at the federal level. For example, the U.S. Department of Education’s Web site allows students who seek financial aid to build individual, personalized profiles. More than 35,000 students have taken advantage of this facility (Eggers 2005).

Early developments in e-partnering have made it possible for information on bidding and contracting to be posted online and requests for proposals to be submitted online. Web sites provide links to local businesses and nonprofit organizations. Through more advanced practices, Internet-based bidding for government contracts has been made possible, GIS online programs have been made available at off-site locations, and government and local educational institutions have been able to offer online courses to government employees.

E-Democracy

The fourth and final function of e-government, e-democracy, is the least practiced but one of the most prominently discussed in the literature. E-democracy seeks to increase participation in government. E-democracy is defined here as the use of technology for increasing citizen participation in government decision making.

E-democracy has a history dating to the 1960s, when scholars, activists, and politicians were forecasting technological utopias (Bryan, Tsagarousianou, and Tambini 1998). The current interest in e-democracy can be attributed to the lack of performance in old technologies used in promoting democratic processes (Shane 2002). Early discussions of the technology-democracy relationship highlighted the potential of telecommunications, with emphasis on cable television and telephone conferencing (Arterton 1988; Becker 1993; McLean 1989). The focus has now shifted to the Internet, which has made it easier for citizens to demand and obtain information (Browning 2002; Kamarck and Nye 1999; Gattiker 2001; Wilhelm 1998; Witschge 2002; Westen 2000).

Information and communication technology provide the possibility for direct-democracy to take place on a larger scale (Korac-Kakabadse and Korac-Kakabadse 1999). Proponents of e-democracy argue that it will allow for greater government transparency and openness, which can lead to a better-informed citizenry and increased accountability and reduced government corruption. Seoul's Online Procedures Enhancement for Civil Application (OPEN) system has been cited as a successful example (Holzer and Kim 2004). Online discussion boards are another example of the opportunistic use of technology for enhancing e-democracy. Online discussion boards allow for political discussions without requiring participants to share space and time, which may increase access to political debates (Malina 1999). The potential for citizen participation in decision making

and policy making is growing, albeit slowly, through initiatives such as www.regulations.gov (Skrzycki 2003; Holzer et al. 2005).

Although Weber (2002) found that governments may not be taking full advantage of Internet technologies to encourage e-democracy, municipalities have already begun to provide for the disclosure of information pertinent to government decision making and for two-way communication. Early developments in e-democracy have allowed for a number of online possibilities: municipal board meetings can be announced and minutes can be published, budget information can be disclosed, and downloadable voter registration forms can be made available. Advanced developments pose a bigger challenge in that they require a degree of organizational transformation in order to be achieved. Through more advanced practices, citizens can join online discussion boards via a municipality's Web site, public officials can participate in online policy forums, and voting on local elections and referendums can take place online.

Research Framework

Various factors were considered as variables of possible influence based on the e-government literature. These factors are categorized as managerial variables and organizational variables. Managerial variables are associated with the perspectives of chief administrative officers toward the four functions of e-government. More broadly associated with a municipality are organizational variables such as whether it has a separate IT department and a strategic plan, the size of its budget and the population it serves, and its form of government. In all, 14 variables were tested against the four functions of e-government (see Table 1).

Managerial Variables

Variables were developed from the chief administrative officers' responses to survey questions on current practices and personal perspectives. The respondents were predom-

Table 1. Definitions of Variables

Organization Variables	
FOGMC	1 = form of government is mayor-council 0 = all other forms of government
FOGCM	1 = form of government is council-manager 0 = all other forms of government
IT	1 = municipality has an information technology (IT) department 0 = municipality does not have an IT department
STRGPLAN	1 = municipality has a strategic plan with a reference to e-government 0 = no strategic plan or reference to e-government
BUDGET	Percentage of municipal budget spent on IT initiatives 0 = $\geq 0.05\%$; 1 = 0.06%–0.5%; 2 = 0.6%–1%; 3 = 2%–5%; 4 = 6.0% \leq
POP	Municipal population (under 50,000 residents)
Manager Variables	
P-EORG	Composite measure for CAOs' perspectives on the function of e-organization (scale of 1 to 7; negative to positive perspective)
P-ESERV	Composite measure for CAOs' perspectives on the function of e-services (scale of 1 to 7; negative to positive perspective)
P-EPART	Composite measure for CAOs' perspectives on the function of e-partnering (scale of 1 to 7; negative to positive perspective)
P-EDEMC	Composite measure for CAOs' perspectives on the function of e-democracy (scale of 1 to 7; negative to positive perspective)
SCRTY	Measure for CAOs' concern over security and privacy (scale of 1 to 7; little concern to greatest concern)
GENDER	1 = male; 0 = female
AGE (years)	0 = 18–24; 1 = 25–34; 2 = 35–44; 3 = 45–54; 4 = 55–64; 5 = 65 and over
EDU	1 = Master of Public Administration 0 = No MPA

inately city managers but also included other officials such as municipal supervisors and city administrators. In those few cases in which a municipality did not have a city administrator, the mayor of the municipality was the respondent. As mentioned throughout the literature, CAOs play a critical role in the development of e-government initiatives (Heeks 1999; Weare, Musso, and Hale 1999; Ho 2002; Melitski 2003; Pascual 2003; and Halachmi 2004). In their study of municipal Web sites in California, Weare, Musso, and Hale (1999) determined that the adoption of new technologies by organizations usually requires a champion, or advocate, from

within the organization. Pascual (2003, 29) suggests that strong leadership is critical to the success of e-government because it “ensures the long-term commitment of financial resources, personnel and technical expertise in the design, development and implementation of e-government projects.”

In a separate section of the survey, CAOs were asked about their views on early and advanced practices associated with each e-government function. Composite measures for each of the four functions were constructed based on CAOs' responses (see Table 1). These composite measures serve as the first four managerial variables.

The fifth managerial variable is based on CAOs' perspectives on security and privacy. The majority of American citizens feel that government should proceed cautiously in relying on the Internet for citizen-government communications because of the potential for security and privacy violations (Hart-Teeter 2003). Providing such assurances is critical to successful e-government performance and online citizen participation (Hart-Teeter 2003). Privacy and security concerns are especially relevant with regard to more advanced e-government practices such as online transactions. Municipalities that have accepted Web site security and privacy as critical issues requiring specific policies or that acknowledge they must address concerns about these matters are more likely to adopt advanced e-government functions.

The last three managerial variables are gender, age, and education. Gender as a factor of diversity can be overlooked but can play a critical role in public management discourse (Thomas and Davies 2002). The first assumption is that a manager's gender will influence decisions and outcomes in the development of e-government functions. Davies and Thomas (2002, 478) have questioned to what extent new managerial philosophies such as New Public Management challenge "existing hegemonic masculinities within public service organizations, offering space for new voices, new meanings and new professional/managerial subjectivities." As the notion of "digital governance" is given more credence over NPM (Dunleavy et al. 2006), the gender variable should be considered in the study of technology in public organizations. The changing gender demographics of public managers may play a critical role in how new technologies are used. Women who may be relatively new to public management may come into their positions with a more receptive attitude toward new approaches to management such as e-government. The expectation is that female managers will more positively affect their municipality's e-government practices.

The second assumption is that a manager's age will influence decisions and outcomes in the development of e-government functions. The skills and knowledge needs of public administrators change over time and differ among those who are early in their careers and those with years of experience (Crewson and Fisher 1997). Recognizing that a manager's age plays a factor in different decisions and practices, combined with the general assumption that younger generations are more able to adapt to new technologies, it is expected that a younger manager will more positively affect his or her municipality's e-government practices.

To account for the influence of education on e-government practices, respondents were asked whether they hold an MPA. The assumption here is that educational level informs attitudes and decisions with regard to the application of technology in the e-government context. It has been shown that programs that incorporate IT courses into their curriculums can most effectively prepare public managers for the future and that there is an increasing need to offer such courses (Brown and Brudney 1998; Holzer and Lin 2007).

Organizational Variables

One key organizational variable derived from the literature is whether a municipality houses a separate IT department. Organizations with IT departments tend to have more advanced e-government initiatives. A second independent variable that may be critical to e-government is strategic planning. As the Organisation for Economic Co-operation and Development (2003, 68) recommends, "where possible, e-government should encompass . . . a planning process with specific goals and targets." It goes on to argue that a common vision is essential to e-government.

A third independent variable is the municipal budget. A tight budget can be a significant barrier to e-government development. Funding for IT initiatives requires large expenditures. The success of an e-government

initiative does not necessarily suggest sustainability, however, as costs relative to benefits are still considered in determining whether a project will be continued (Watson et al. 1999). Per capita city revenue also has been correlated with early technological adoptions (Weare, Musso, and Hale 1999). It is expected that those municipalities that devote a larger percentage of their yearly budget to IT development and initiatives will have more advanced e-government practices.

A fourth organizational variable is municipal population. Research on e-government has tended to focus on countries, states, or cities with more than 50,000 residents (Kaylor, Deshazo, and Van Eck 2001; West and Berman 2001; Ho 2002; Holden, Norris, and Fletcher 2003; Scott 2005; 2006). Two notable exceptions are studies conducted by the International City/County Municipal Association (ICMA) and the Center for Digital Government. Each conducts national surveys of municipalities with populations of fewer than 50,000 residents. The expectation here is that the larger the population, the more advanced the municipality's e-government practices will be.

The final organizational variable reflects the influence of form of government (i.e., council-manager, mayor-council, and commission forms) on e-government performance. Municipal forms of government have been identified as conducive environments in which managers can cultivate their skills (Crewson and Fisher 1997). One study has found that the council-manager form is supportive of e-government development (Moon 2002). In order to further explore the role of a municipality's form of government in e-government performance, the two most reported forms (i.e., mayor-council and council-manager forms) were included as organizational variables in the research design.

Hypotheses

Each hypothesis was constructed to represent each independent variable's influence on the four functions of e-government. Each

hypothesis has four distinct relationships: e-organization (a), e-services (b), e-partnering (c), and e-democracy (d).

Hypothesis 1a–d. A municipality with a council-manager form of government will have more advanced e-government practices than a municipality that does not have a council-manager form.

Hypothesis 2a–d. A municipality with an IT department will have more advanced e-government practices than a municipality that does not have an IT department.

Hypothesis 3a–d. A municipality that has a strategic plan that includes a section on e-government will have more advanced e-government practices than a municipality that does not have such a plan.

Hypothesis 4a–d. A municipality that spends a larger percentage of its budget on IT will have more advanced e-government practices than a municipality that spends a lesser percentage of its budget on IT.

Hypothesis 5a–d. Municipalities that have larger populations will have more advanced e-government practices than municipalities that have smaller populations.

Hypothesis 6a–d. A chief administrative officer who has a positive perspective on the functions of e-government will more positively affect his/her municipality's advanced e-government practices than a chief administrative officer who has a negative perspective.

Hypothesis 7a–d. A chief administrative officer who has concerns over privacy/security will more negatively affect his/her municipality's advanced e-government practices than a chief administrative officer who does not have such concerns.

Hypothesis 8a–d. A younger chief administrative officer will more positively affect his/her municipality's e-government practices than a chief administrative officer who is older.

Hypothesis 9a–d. A chief administrative officer who has an MPA will more positively affect his/her municipality's e-government practices than a chief administrative officer who does not have a degree in public administration.

Hypothesis 10a–d. A female chief administrative officer will more positively affect her municipality's e-government practices than a male chief administrative officer.

Data and Methodology

For this study, a survey of municipal chief administrative officers in New Jersey was conducted in the fall of 2005. New Jersey municipalities were chosen because of the availability of the data. Although the generalizability of the findings is limited, this study nevertheless contributes to e-government research because it differs methodologically from previous studies. Research on e-government has been focused primarily on large municipalities. Moreover, e-government research has been limited to examinations of the performance of e-government functions and has lacked analysis of municipal managers' views and influence.

The constructed survey used in this study was intended for the chief administrative officer of each municipality in New Jersey. A total of 196 valid survey responses were collected, of which 182 represented municipalities with populations of fewer than 50,000 residents. The response rate of municipalities surveyed with fewer than 50,000 residents was 50.2 percent. With 545 municipalities representing the sample population of this research, the 182 responses result in a 33.3 percent rate.

The following pertain to respondents' descriptive characteristics. Most respondents were in the age range of 45 to 54 years (36.8 percent), followed closely by the 35- to 44-year range (35.2 percent). Over 70 percent of respondents were male. Included in the survey were nine options for education. Most respondents reported having an MPA (38.5

percent). The average population of municipalities was 15,334 residents. The mayor-council form of government was the most prevalent.

Four dependent variables were constructed based on the survey responses. The dependent variables representing the four functions of e-government are composite measures that range from 1 (early developments) to 6 (more advanced developments). The composite measures were tested for reliability using Cronbach's alpha.

The survey questions used to construct the dependent variables were specific to current practices in each municipality and were distinct from those questions asked of municipal CAOs and their personal views on the functions of e-government. In cases of missing data, variable averages were used as proxy figures (only seven cases of missing data were identified throughout the dataset). Both the independent and dependent variables were tested for correlation. Only two variables were found to be highly correlated (.807): security and privacy. Although they can refer to two very different aspects of e-government, they are often interpreted as being one and the same. For purposes of this study, they were grouped into one independent variable.

The statistical technique performed for analysis of the survey data was ordered logistic regression using the STATA statistical program. The regression models were based on the direct effects of the independent variables on the four dependent variables. The tables include two sets of models: the first set of models includes all the independent variables. The second set includes the independent variables that are statistically significant at $p < .10$ (Z-test).

Findings and Discussion

E-Organization

The first function of e-government analyzed using regression, e-organization, suggests that three factors influence its development

(Table 2). In particular, the probability of more advanced practices in e-organization increases with the presence of an IT department within a municipality. This factor has an influence only on the e-organization function. As hypothesized, municipalities that devote a larger percentage of their yearly budget to IT development and initiatives are expected to have more advanced e-government practices. Increased city revenue has been found to correlate significantly with the likelihood of technological adoptions (Weare, Musso, and Hale 1999).

The second factor influencing e-organization development is municipal population. E-government literature has consistently shown that the larger the population, the more advanced the e-government practices. However, in this study, population and e-organization were found to have a negative relationship; that is, more advanced developments were found in the smallest municipalities (i.e., those with fewer than 20,000 residents). This finding suggests that the smaller a municipality,

the greater the focus on e-organization. This finding can be attributed, in part, to small municipalities channeling IT resources to e-organization practices over e-services, e-partnering, and e-democracy. It also may be that these municipalities lack the resources needed for the development of the other three functions, resulting in a significant focus on e-organization. Model 1 indicates that municipal population was significant ($p < .10$); however, when tested again in Model 2, population was no longer significant. Nonetheless, a negative relationship would indicate that further research on municipalities with small populations is needed.

The final factor influencing e-organization is CAOs' perspectives on specific functions. It was hypothesized that if a CAO has a positive view toward e-organization, then the municipality he/she serves will have more advanced developments in e-organization. This connection is often assumed but rarely has been affirmed in the literature. The findings here show that there is a clear relationship be-

Table 2. Direct Effects Models of E-Organization Practices

E-Organization	Model 1		Model 2	
	Odds Ratio	Z	Odds Ratio	Z
Organizational Variables				
FOG mayor-council	1.12	0.37		
FOG council-manager	1.02	0.05		
IT department	2.04	1.86*	1.84	1.75*
Strategic plan	2.30	1.34		
Budget	1.13	1.05		
Population	0.78	-1.73*	0.83	-1.37
Managerial Variables				
Perspectives of EORG	1.76	3.88***	1.71	4.20***
Perspectives of ESERV	0.83	-1.06		
Perspectives of EPART	0.94	-0.48		
Perspectives of EDEMC	1.08	0.84		
Security	1.11	1.34		
Gender	1.05	0.15		
Age	0.82	-1.35		
Education (MPA)	0.97	-0.09		
Chi-square (significance)	32.31 (.003)		23.16 (.000)	

* $p < .10$ ** $p < .05$ *** $p < .01$ $N = 182$

Note: See Table 1 for definitions of variables.

tween how a CAO views the function of e-organization and a municipality's practice of it. The remaining functions corroborate the importance a CAO's role in e-government development.

E-Services

Five variables are recognized as contributing factors to the development of e-services (see Table 3). The first two variables are both associated with a municipality's form of government. Having a mayor-council form of government is negatively associated with the practice of e-services, while the council-manager form of government has a positive association. Although these two variables were not shown to be highly correlated in statistical analysis, there is a clear indication that the development of e-services is more evident in a council-manager form of government than in a mayor-council form. These findings support previous research that the council-manager form of government fosters advanced practices in e-government.

Strategic planning also has a positive relationship with e-services. Having a strategic plan increases the probability of a municipality engaging in advanced practices in e-services. As the literature has shown, strategic planning is critical to the advancement of e-government functions. In particular, e-services are more prominent when a municipality has an IT strategy, which reflects the need to think long term in the service area. Strategic planning plays a role in e-partnering as it does in the related function of e-services.

The final two factors associated with e-services are based on CAOs' perspectives. Positive views of e-services tend to correspond with more advanced practices in e-services. This finding, as with e-organization, was expected. Positive views toward a particular function of e-government translate into its increased performance. This finding reinforces the role of CAOs in the progress of e-government.

There is a negative relationship, however, between CAOs' perceptions of e-democracy

Table 3. Direct Effects Models of E-Services Practices

E-Services	Model 3		Model 4	
	Odds Ratio	Z	Odds Ratio	Z
Organizational Variables				
FOG mayor-council	0.46	-2.32**	0.41	-2.78***
FOG council-manager	2.42	1.92*	2.62	2.13**
IT department	0.79	-0.61		
Strategic plan	3.75	2.15**	4.86	2.93***
Budget	1.06	0.56		
Population	1.21	1.45		
Managerial Variables				
Perspectives of EORG	0.95	-0.33		
Perspectives of ESERV	1.62	2.88**	1.55	2.92***
Perspectives of EPART	1.03	0.25		
Perspectives of EDEMC	0.79	-2.28**	0.83	-2.05**
Security	0.99	-0.03		
Gender	0.80	-0.66		
Age	0.97	-0.16		
Education (MPA)	1.33	0.95		
Chi-square (significance)	44.03 (.000)		39.68 (.000)	

*p < .10 **p < .05 ***p < .01 N = 182

Note: See Table 1 for definitions of variables.

and the practice of e-services. Often, e-government is vaguely defined as a government's utilization of IT, overlooking the distinct e-government functions. A CAO may support IT as a way to promote service efficiency and effectiveness while simultaneously not wanting to use IT to promote democratic practices. The negative relationship between a CAO's perspective on an e-government function and the practice of the function can in part be attributed to the influential decisions of the CAO. A CAO's decision not to promote online democratic practices is not entirely attributable to the manager's perspective toward the function. Ignorance or unfamiliarity (attributes not accounted for in this study) may also play a role. The negative relationship with perspectives on e-democracy surfaces again in e-partnering.

E-Partnering

Six variables are recognized as contributing factors toward the development of e-partnering (Table 4). The first variable to indicate

a positive relationship with e-partnering is strategic planning. As with e-services, the presence of a municipal strategic plan increases the probability of advanced practices in e-partnering. Planning not only is critical in the practice of online services but also surfaces as a positive factor in partnering with external organizations.

The next three variables are based on CAOs' perspectives on the functions of e-government. Positive views toward e-organization and e-partnering correlate with more advanced practices in e-partnering. The positive relationship between e-partnering and a CAO's view toward e-partnering supports previous findings in this regard: more advanced practices in a particular e-government function likely are a result of having a CAO who has a positive view of the practice of that particular function.

There also is a positive relationship between views toward e-organization and the practice of e-partnering (Table 4). An interpretation of this finding suggests that a posi-

Table 4. Direct Effects Models of E-Partnering Practices

E-Partnering	Model 5		Model 6	
	Odds Ratio	Z	Odds Ratio	Z
Organizational Variables				
FOG mayor-council	0.62	-1.36		
FOG council-manager	1.20	0.38		
IT department	1.84	1.57		
Strategic plan	8.52	3.40***	11.52	4.35***
Budget	1.15	1.10		
Population	1.00	0.06		
Managerial Variables				
Perspectives of EORG	1.43	2.29**	1.42	2.39**
Perspectives of ESERV	0.86	-0.79		
Perspectives of EPART	1.50	2.98***	1.51	3.28***
Perspectives of EDEMC	0.76	-2.43**	0.77	-2.46**
Security	0.92	-0.91		
Gender	0.51	-1.85*	0.45	-2.35**
Age	0.87	-0.91		
Education (MPA)	1.90	1.99**	2.17	2.55**
Chi-square (significance)		69.12 (.000)		58.54 (.000)

p* < .10 *p* < .05 ****p* < .01 *N* = 182

Note: See Table 1 for definitions of variables.

tive perspective on the internal workings of a municipality (i.e., e-organization) allows for a municipality to confidently partner with external organizations. Internal success (or at least the impression of strong internal functioning) can lead to strong external partnerships. On the other hand, a negative relationship exists between CAOs' perspectives on e-democracy and the practice of e-partnering. As with e-services, the negative relationship reinforces the notion that CAOs can hold different views regarding the four types of e-government functions. The implications of this relationship reinforce the uniqueness of each function and the need to further explore the mindset of managers and their choices to develop some functions of e-government while leaving others underdeveloped.

Finally, the descriptive variables of gender and education surface as significant factors only in e-partnering. This finding highlights the unique nature of this function. E-partnering requires a conscious effort to work intimately with external organizations. A negative

relationship was found between male CAOs and the practice of e-partnering; or rather, in municipalities in which CAOs are female, the practice of e-partnering was more advanced, supporting the research hypothesis. This correlation needs to be researched further to explore the potential reasoning.

The final factor of significance in e-partnering is education. Specifically, in municipalities in which a CAO holds an MPA, the practice of e-partnering was found to be more advanced. This finding supports the hypothesis, which was based on the rationale that MPA programs offer courses in e-government. However, other benefits may be accrued from MPA programs with regard to e-partnering. For example, a program may afford students opportunities to develop working relationships with external organizations.

E-Democracy

Three variables are associated with the development of e-democracy (Table 5). As with e-services, having a mayor-council form of

Table 5. Direct Effects Models of E-Democracy Practices

E-Democracy	Model 7		Model 8	
	Odds Ratio	Z	Odds Ratio	Z
Organizational Variables				
FOG mayor-council	0.38	-2.82***	0.37	-3.42***
FOG council-manager	0.81	-0.46		
IT department	1.89	1.61		
Strategic plan	0.94	-0.10		
Budget	1.20	1.56		
Population	0.93	-0.47		
Managerial Variables				
Perspectives of EORG	1.37	2.18**	1.33	2.14**
Perspectives of ESERV	0.92	-0.47		
Perspectives of EPART	0.87	-1.11		
Perspectives of EDEMC	1.18	1.67*	1.13	1.43
Security	1.05	0.59		
Gender	1.29	0.75		
Age	0.94	-0.38		
Education (MPA)	1.12	0.39		
Chi-square (significance)	32.11 (.003)		24.63 (.000)	

* $p < .10$ ** $p < .05$ *** $p < .01$ $N = 182$

Note: See Table 1 for definitions of variables.

government is negatively associated with the practice of e-democracy—a surprising finding. It is ironic that municipalities with an elected mayor, which is reflective of democratic practices, tend to have less advanced e-democracy practices. This finding could, in part, be reflective of towns and municipalities having democratic practices supported and practiced off-line. In these municipalities, online democracy is still in its earliest stages of development.

The findings for the remaining two variables associated with CAOs' perspectives on e-democracy and e-organization support the hypotheses. Positive views toward e-organization are associated with more advanced e-democracy practices. It may be that CAOs who perceive strong internal workings within an organization feel more comfortable advocating advanced online democratic practices. There also is a correlation between positive views toward e-democracy and the practice of more advanced forms of e-democracy. It is safe to conclude that a CAO's support for and overall positive views toward any of the four functions of e-government correspond with the more advanced practice of that particular function in the CAO's municipality.

Conclusion

The overall findings of this study suggest that municipalities will develop more advanced practices in e-organization and e-services in the future. The use of technology for the functions of e-partnering and e-democracy are currently in their earliest stages of development. Data analysis also suggests that factors such as whether a municipality has an IT department and a strategic plan and its form of government all influence e-government. Previous research has dealt with the abstract notion of e-government. However, these findings indicate that the various functions of e-government need to be distinguished in order to identify the contributing factors and their level of influence and to gain a more comprehensive understanding of the concept. There are distinct differences in views toward

each of the four functions, and these differences translate into unique implications for e-government performance. State and local governments, regardless of size and population, practice all four functions of e-government, and it is clear that the role of CAOs is a critical part of e-government. These findings should be taken into consideration in future research and analysis on this subject.

This study opens up possibilities for future research. For example, the connection between form of government of the practices associated with e-democracy could be further explored. An examination of the political views and affiliations of CAOs may also lend greater insight into the performance of e-democracy. In this study, respondents were anonymous and were only asked to provide first-hand impressions and basic information. Specific data such as municipal Internet usage or municipal demographics and history were not included. Future research on e-government and its various functions could go beyond examining the factors included here and the municipalities of only one state.

Overall, the findings for small municipalities reflect the general findings of previous research in e-government for large municipalities. Regardless of municipal size, e-government practices will still require strong leadership advocacy and organizational resources. E-government is not a singular term with clearly definable practices but rather an evolving and diverse collection of practices. Each distinct function, when separately studied, may provide a deeper understanding of the future of e-government performance.

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