

# Citizen-centered E-Government Services: Benefits, Costs, and Research Needs

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## ABSTRACT

The promise of E-Government (and its more recent spin-offs of E-Democracy, E-Participation, E-Procurement, and a range of other “E-‘s”) is to engage citizenry in government in a user-centered manner, but also to develop quality government services and delivery systems that are efficient and effective. User-centered E-Government suggests that governments will provide services and resources tailored to the actual service and resource needs of users, including citizens, residents, government employees, and others. Efficient and effective E-Government suggests that governments will gain economies of scale, reduce costs, and provide technology-enabled user services. The extent to which these goals of E-Government are mutually exclusive is an issue that requires additional study, particularly research that focuses on the relationship between citizen-centered E-Government services and the attainment of cost savings. A key issue is that citizen-centered E-Government implies that governments know what citizens want from E-Government, want to meet citizen expectations and needs, and actively seek to discover what citizens want from E-Government. This paper presents a range of issues associated with the development and implementation of citizen-centered e-Government.

## Keywords

Citizen-centered E-Government; Evaluation; Performance measurement.

## 1. INTRODUCTION

The promise of E-Government (and its more recent spin-offs of E-Democracy, E-Participation, E-Procurement, and a range of other “E-‘s”) is to engage citizenry in government in a citizen-centered manner, but also to develop quality government services and delivery systems that are efficient and effective. Citizen-centered E-Government suggests that governments will provide services and resources tailored to the actual service and resource needs of users, including citizens, residents, government employees, and others. Efficient and effective E-Government suggests that governments will gain economies of scale, reduce costs, and provide technology-enabled user services. There have been many predictions that E-Government will revolutionize democratic participation or that it will revolutionize the delivery of government services in one of these ways for a number of years (Borins, 2002; Browning, 2002; Noveck, 2003; Prins, 2001; Toregas, 2001).

But, there is a dilemma: to develop citizen-oriented E-Government services that achieve cost savings implies that governments know what citizens want from E-Government, want to meet citizen expectations and needs, and actively seek to discover what citizens want from E-Government. These sorts of information collection by governments, however, are rare at best (Heeks & Bailur, 2007).

This paper argues that citizen-oriented E-Government requires a number of planning and design processes to be successful and that using such an approach may, in fact, increase the costs of providing E-Government services. Users of e-government comprise a number of groups—citizens employing government information and services; residents and immigrants seeking information about their new country; government employees using e-government in their job functions; people in other countries wishing to know more about a nation; and on and on. Typically, “top-down” or systems-based E-Government design fails to adequately consider citizen information needs. Thus, the degree to which both goals of improved user-oriented E-Government and more efficient (reduced costs of) government services can be accomplished simultaneously through E-Government may be problematic. There are, however, a number of strategies to improve citizen-oriented E-Government services.

## 2. RESEARCH QUESTIONS AND METHODOLOGY

This research, through separate research initiatives, sought to identify the issues associated with providing citizen-centered E-Government from both a user and agency perspective. The research efforts were exploratory and limited, with the expectation of pursuing the findings in a larger-scale and comprehensive study. However, research efforts used multiple methodologies, including interviews with state and federal government agency personnel responsible for various E-Government initiatives, a survey with federal agency E-Government developers, interviews with users actively engaged in E-Government services, usability testing with persons with disabilities attempting to use federal agency E-Government services and resources, and interviews with public librarians who are increasingly providers of E-Government services due to their free public access computers and Internet access (see Bertot et al,

2006a and 2006b). In all, the studies collected data from 20 state and federal agencies, five large public library systems (with a total of nearly 100 branches), and twenty users.

The exploratory research questions guiding the user portion of the study included the following:

- 1) What are user expectations from E-Government services and resources?
- 2) What are the issues and barriers users encounter when using E-Government services and resources?
- 3) What factors facilitate and enhance do users experiences with E-Government services and resources?

Questions with federal and state government personnel responsible for E-Government services and resources included:

- 1) What are the primary drivers of the development and implementation of E-Government services and resources?
- 2) To what extent are citizen needs and expectations included in the design and implementation of E-Government services and resources?
- 3) How are citizen identified expectations and desires in E-Government services and resources incorporated into the overall design and continual enhancement of E-Government services and resources?

Questions for public librarians included:

- 1) What are public librarians doing to support E-Government services and resources?
- 2) What needs do users have in attempting to engage in E-Government service and resource use?
- 3) Are there design issues that facilitate and/or act as barriers to successful citizen E-Government interaction?

### 3. FINDINGS

In looking across the research efforts, the core findings are presented below:

- Government agencies do not as a rule engage citizens in the development of their E-Government services and resources. Rather, many applications are internally driven to meet cost savings and other government mandates regarding efficiency.
- Government agencies do not systematically engage users in feedback on designed E-Government services and resources. In fact, though many agencies do have a “contact us” form of feedback, agencies do not have a formal process for handling suggestions for improvement.
  - The research also revealed that the vast majority of sites had little to no feedback from users with disabilities in trying to create accessible sites (Jaeger, 2006, in press).
- Government agencies do not systematically solicit service quality, outcome, or other evaluation data. Essentially, once a service is up and running,

improvements come largely in the form of system updates and as responses to programmatic changes which force a change in an application.

- Users identified that the key barriers to E-Government for them included
  - A lack of an integrated approach across E-Government services and resources, which required them to essentially “start from square one” for each service and resource accessed. The inconsistency proved highly problematic for individuals who lacked computing skills.
  - Problematic design issues that often served as a barrier to accessing content and services.
  - Technology requirements that forced an approach to accessing services and resources, for example, some sites were only accessible with a certain browser, selected browser plug-ins, and technology configuration.
  - Language barriers that served to make some content inaccessible.
  - Requirements to accessing services and resources such as forms of payment, documentation, the necessity for an e-mail address, and other items.
- Public librarians indicated that users came to the library to access E-Government services for four primary reasons: 1) lack of computer and Internet technology access; 2) lack of technology skills; 3) Inability to understand government services and resources; and 4) the need ask for assistance from an individual rather than a website or seldom answered phone help service.
- Public librarians indicated that they are largely “out of the loop” when government services go online or there are major modifications to applications and services and resources – and yet they are increasingly assisting a range of users (seniors, those without access to technologies, disaster [i.e., hurricane] victims).

Given that the research efforts were exploratory, one cannot fully generalize to all E-Government services and resources. However, the findings do indicate a general lack of citizen inclusion in the development, design, and implementation of E-Government services and resources. Moreover, the findings indicate that this lack of inclusion of citizens in an ongoing and regular basis can lead to a range of barriers for users of E-Government services – and that users are seeking help from alternate sources such as public libraries.

### 4. DISCUSSION

The ensuing discussion provides a range of considerations and strategies for the development of citizen-centered E-Government services and resources that agencies and others may want to consider as they pursue their E-Government strategies.

#### 4.1 Engaging Citizenry in E-Government: Concepts and Case Studies

To engage users successfully in E-Government requires a range of iterative and integrated planning and design processes such as conducting an information and service needs assessment, technology needs assessment, determining the availability of appropriate content and services to meet user needs, the ability of citizens to engage in E-Government services due to information and technology literacy, the knowledge of government in order to determine which agency or level of government provides the needed service or resource, usability and functionality testing, accessibility testing, and others. These considerations are essential to the development, implementation, and continual improvement of user-centered E-Government services. These are not onetime issues; they are iterative and essential part of the continuing process of developing and refining E-government sites.

Failures in the above areas can result in the inability of citizens to make full use of developed E-Government Services and resources – or the need to solicit assistance from other community-based entities such as public libraries, as the data from the study indicated.

## **4.2 Strategies for Citizen-Centered E-Government**

In looking at these processes, it is possible to envision a range of integrated and coordinated methods, approaches, and strategies to better incorporate users in the development of E-Government services. These strategies are neither complicated nor difficult to implement. They may, however, result in additional costs and effort in the implementation of E-Government services.

### *4.2.1 Comprehensive Plan for User-centered E-Government Services Design*

A comprehensive plan for user-centered E-Government services minimally includes identifying the goals of that service; ways in which the service supports other agency/ government goals; managerial structure for the development of the service; target audience(s) of the service; information needs of users that the service addresses; resources available for the development of that service; and time line describing key tasks and responsibilities for the development, implementation, and evaluation of that service.

Most importantly, the plan describes the specific citizen-centered strategies that will be incorporated in the design and operation of the E-Government service under development. Development of E-Government services without such a plan is likely to result in poor quality services with limited capacity to meet user information needs – though a service may in fact meet agency goals of cost reduction.

### *4.2.2 Conduct User Information Needs Assessments*

Before the design and development of an E-Government service, governments need to understand how users seek information on a particular topic or issue (strategy); acquire information on a topic or issue (acquisition); solicit expertise (source); and use of that

information (application). Such knowledge enables governments to know how users find and use information, as well as the sources they use. Equally important is understanding how the information is to be used and what specific types of problems the user intends to address with the information. This helps in not only an overall understanding of users' information behavior, but also identifies potential community partners to assist in E-Government service delivery and adoption strategies (more on this below).

### *4.2.3 Understand User Information and Communication Technology Availability, Expertise, and Preference*

Developing a Web-based E-Government service that requires a broadband connection, high-end computer, and advanced technology competencies can immediately exclude a segment, or multiple segments, of the intended service population. For example, the Department of Children and Families in Florida, through its services (food stamps, medicare, cash assistance) gateway application Access Florida (<http://www.myflorida.com/accessflorida/>), requires that its clients complete the application online. And yet those who qualify for these services are the least likely to own a computer, have access to the Internet, or be conversant in computing and Internet technologies (Pew Internet and American Life Project, 2007).

The tension between system developers and designers and user ability to use high-end computing and telecommunications is critical to resolve. A too complex system may not be used at all; a system that resides on technologies to which the user does not have access will also guaranty failure. By understanding the technology access and capabilities of the various segments of users, governments can develop systems that better meet the needs of users, but also understand the types of training and support users may need for successful engagement of E-Government.

### *4.2.4 Engage Users*

Top-down, systems-oriented E-Government services can result in elegantly designed and technically sophisticated E-Government systems that completely miss the intended users' needs. The top down approach is often less costly than conducting a range of user-based needs assessments and other strategies as outlined in this paper. The products and services that can result from top-down or systems based design can include, for example, lengthy forms that collect unneeded data; services that defy logic in their use and/or access; complicated instructions that simply cannot be accommodated by online applications; and excessive personal data for which the user has not been reassured of privacy and security concerns (to name but a few). All of these types of problems can be identified and corrected by engaging users in the actual design of the service.

There are a range of tools and techniques in which governments can engage to develop successful E-Government services such as focus groups and interviews (with experts and users); usability, functionality, and accessibility testing throughout the design and development process; encouraging real-time comments and suggestions about the services being used; log file and transaction log analysis; providing interactive help screens or 1-800 assistance; and developing and adhering to measures and standards of service quality. There are other strategies and approaches, but the key is to include user feedback during the E-Government service development and design phases as well as while the service is in operation – not as an after thought.

#### 4.2.5 Evaluate E-Government Services for Continual Improvement

Because an E-Government service is launched does not mean that user and community partner feedback should discontinue. Governments need to incorporate ongoing evaluation practices regarding their E-Government services to continually improve and enhance their services. This type of evaluation is known as formative evaluation – ongoing evaluation that monitors program activities with the goal of modifying and improving the program on a regular basis. Such program evaluation cannot occur without significant and ongoing user input that is collected in a systematic and regular process. Governments can implement various strategies to do this – online surveys (brief pop-up surveys, or more detailed); focus groups and interviews with service users; log file analysis; and continued usability testing, for example.

#### 4.2.6 Form Community-based Partnerships

Related to many of the above, the development and launch of E-Government services can benefit from the inclusion of community-based organizations such as public libraries and community technology and other centers. In the United States, for example, users of E-Government services are increasingly seeking assistance with E-Government services from public libraries (Bertot et al, 2006a, 2006b), though governments do not necessarily view public libraries as agents of E-Government. But as trusted community centers with information and technology professionals and providers of public access computer and Internet access, users find their way to public libraries for help in accessing, understanding, and using E-Government services (Bertot et al, 2006a, 2006b; Jaeger & Fleischmann, 2007). This is particularly true in times of disaster, as witnessed during the multiple hurricanes that struck the U.S between 2004 and 2006 (Jaeger et al, 2007).

By working with community partners, governments can increase the chances of success and use by helping the partners understand the E-Government programs, the E-Government service, and the E-Government service requirements. The key word here, however, is “partnership.” The perspective of the government “off-loading” E-Government services and services support to community organizations without coordinating, training, and involvement is not likely to improve user-oriented services. Moreover, governments and community partners can collaborate

in preparing a range of training and support material to facilitate user interaction with a range of E-Government services.

## 5. RESEARCH PATHS AND OPPORTUNITIES

The above strategies are not comprehensive, but they suggest a picture of the issues involved in developing successful user-centered E-Government. In short, successful user-centered E-Government is labor-intensive, costly, and requires a range of expertise in research methods, qualitative and quantitative data analysis techniques, technologies, systems and application design, a fundamental understanding of what users want from E-Government, and an ability to elicit from users their needs from E-Government. Table 1 lists sample studies in many of the areas of citizen-centered E-Government research discussed in this paper.

Table 1. Selected Citizen-Centered E-Government Research.

Area of Citizen-centered E-Government Research	Sample Recent Papers
<i>Needs, Abilities, and Expectations</i>	Chai, Herath, Park, & Rao (2006) Horst, Kuttschreuter, & Gutteling (2007) Lau, Aboulhoson, Lin, & Atkin (in press) Paul (2007) Sahu & Gupta (2007) Schedler & Summermatter (2007)
<i>Literacy</i>	Akman, Yazici, Mishra, & Arifoglu (2005) Millard (2006) Singh & Sahu (in press)
<i>Community Engagement and Partnerships</i>	Jaeger, Shneiderman, Fleischmann, Preece, Qu, & Wu (2007) King (2007) Reddick (2005) Quinn & Ramasubramanian (2007)
<i>Usability, Functionality, and Accessibility</i>	Barnes & Vidgen (2007) Bertot, Snead, Jaeger, & McClure (2006) Jaeger (2006) Jaeger (in press) Shi (2007)

The trade-offs between successful user-based E-Government services (as described above) and the drive for reduced costs in the delivery of government services offers a broad range of

research opportunities beyond those noted in Table 1 that have yet to be addressed:

- What value does user-centered design and implementation add to E-Government?
- How can user-centered design and implementation be employed to increase usage of E-Government?
- How do user-centered E-Government services accommodate the needs of different segments of user groups?
- Are there generalizable strategies and best practices for improving user-centered E-Government services among state, local, and federal governments?
- How can usability, functionality, and accessibility testing be incorporated into the design and operation of E-Government to promote user-centered services?
- What are appropriate measures of high quality user-centered E-Government services what are comparable across different types of governments?

These are but a flavor of possible areas that could profit from the research begun as presented in this paper.

## 5. CONCLUSION

The provision of citizen-centered E-Government is iterative and requires an ongoing commitment; a desire to measure service quality; to constantly look for opportunities to determine the degree to which the services meet user needs; and a willingness to implement the lessons learned from the various needs assessment. Said differently, citizen-centered E-Government can be costly and may require a cultural shift in governments – from an efficiency orientation to a user orientation. But the citizen-oriented approach can decrease the identified gaps between government service providers and users. And this can increase the use of E-Government services; increase the impact of those services; and increase user interaction with government (Jaeger & Thompson, 2004).

Citizen-centered E-Government contrasts directly to E-Government as a means to reduce the cost of government service provision and simply seeking a different way to provide the same service. A service that does not meet the needs of the user nor one that is difficult to use is a service that is not used – and that is a costly mistake that can require greater investments to correct, if they are ever corrected at all. While the promise of citizen-centered E-Government may revolutionize government-user interaction in the long-term, the preliminary data collected in this

Bertot, J. C., Jaeger, P. T., Langa, L. A., & McClure, C. R. (2006b). Drafted: I want you to deliver e-government. *Library Journal*, 131(13), 34-39.

study indicates that it will require substantial investment and change in the short-term. Not making these investments, however, minimizes the benefits of including users in the design, development, and implementation of E-Government services – and can limit the overall success of E-Government.

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