



## Advancing E-Government performance in the United States through enhanced usability benchmarks<sup>☆</sup>

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### ABSTRACT

Several E-Government website usability studies in the United States employ content analysis as their research methodology. They use either dichotomous measures or a generic scale to construct indexes to conduct comparative reviews. Building on those studies, this article suggests a content-analysis methodology utilizing Guttman-type scales wherever possible to refine usability assessments. This methodology advances E-Government performance through enhanced usability benchmarks to stimulate the organizational dynamics that drive performance improvement.

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### 1. Introduction to content-analysis based website usability studies in the United States

Several E-Government website usability studies in the United States employ content analysis as their research methodology. They use dichotomous measures to record the absence or presence of selected variables (Gant, Gant, & Johnson, 2002; Stowers, 2002; West, 2003a, 2003b, 2006). Constructed indexes rank website classes (i.e., cities) for comparative review. The Holzer and Kim (2004) international assessment raises the bar by introducing a scaling system for some variables (although the New York City website serves as the only U.S. website examined). Their four point scale is generic. It measures the absence or presence of selected variables, the availability of downloadable items, and online governmental interaction capabilities.

Building on existing studies, this article suggests a content-analysis methodology utilizing Guttman-type scales wherever possible to refine usability scrutiny. This methodology advances E-Government performance by providing needed “how to” practitioner guidance (Heeks & Bailur, 2006) in enhancing usability benchmarks. Further, it partially responds to Bertot and Jaeger's (2006) call “to improve E-Government for users...” [through] “research into... ‘best practice user-centered design.”

The analysis unfolds in five sections. First, it punctuates the importance of E-Government usability as the U.S. endeavors to serve a growing digital majority. Second, it discusses usability dimensions and identifies typical respective variables. Third, the article reviews the theoretical framework for the proposed content-analysis methodol-

ogy. Fourth, it explains the proposed methodology for benchmarks. And, fifth, the study comments on the limitations and contributions of the research. It concludes by arguing that more robust benchmarks cultivate the organizational dynamics that drive performance improvements.

### 2. Importance of E-Government website usability

A fading public service delivery paradigm dominates the “normal science” (Kuhn, 1996) springing from the field of public administration. That paradigm sees public service delivery in three modes: face-to-face, telephone, and postal mail service (Brown, 2003). Advances in information technology create a fourth mode of service delivery with E-Government through the internet.

E-Government supplies the means to transcend the obstacles of time and distance (Jaeger, 2003; Moon, 2002; Thomas & Strieb, 2003; West, 2004). While it involves more incremental than transformational change (West, 2005), E-Government precipitates a shift in public service delivery since the internet exists ubiquitously (Ho, 2002). With E-Government, the orientation is on “user satisfaction, control, and flexibility,” external communication is both “formal and informal, direct... [with] fast feedback, [with] multiple channels,” and service delivery is amenable to “user customization.” Research suggests that frequent citizen use of E-Government improves government responsiveness evaluations leading to more “process-based trust” (Tolbert & Mossberger, 2006). Exponential internet usage increases and private sector e-commerce pressure public agencies to serve constituencies electronically. Indeed, “E-Government truly has become a global phenomenon” (Jaeger, 2003).

The much-discussed “digital divide” describes the disparity between those with access to computers and the internet and those without. Beyond digital access, “website usability” refers to the relative ease with which a novice maneuvers around an actual website

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and “does something.” The term refers to a qualitative appraisal of the relative friendliness of a website with ease of use as the standard of measurement. Regardless of one's acumen in negotiating public agency websites, democratic values underlying governmental operations require that E-Government aim for user-friendliness. If websites fail to perform readily from a usability standpoint, and instead block less-knowledgeable citizens from satisfactory contact with their government, the evolution of E-Government will be stymied.

Usability gains importance as public agencies turn to E-Government to facilitate citizen access and minimize costs (Brown & Brudney, 2004). The PEW Internet and American Life Project finds that internet penetration reaches 73% of American adults (Madden, 2006). However, earlier research indicates only 29% of those who contact government do so via E-Government (Horrihan, 2004). The Council for Excellence in Government (2003) states that many non-governmental users do not interact with government online because of difficulty in finding the website information they want. Despite its rapid evolution (Holden, Norris, & Fletcher, 2003), E-Government fails to achieve its full potential unless the website usability barrier is recognized and bridged. Schultz (2001) urges that E-Government takes a user service approach to close the gap. “The face the government presents to the public should look like an easily navigable array of services.” Users must be able to master tasks quickly.

Pearrow (2000) notes three possibilities why people go to a website: (1) surfing (exploring websites in a random manner), (2) known item searching, and (3) task oriented interaction. E-Government usability studies concentrate analysis on the latter two. This contrasts with the notion of website “likability,” or the degree to which a user favors a website (Spool, Scalon, Schroeder, & Snyder, 1997). From Pearrow's (2000) perspective, usability attempts to ensure that regardless of how, when, or where users enter a website, they can use it. He addresses the notion of usability from a “usage centered design” vantage point and offers this definition:

Usability is the broad discipline of applying sound scientific observation, measurement, and design principles to the creation and maintenance of... [websites] to bring about the greatest ease of use, ease of learnability, amount of usefulness, and least amount of discomfort for... [those] who have to use the system.

### 3. E-Government website usability dimensions and variables

This section moves from the importance of E-Government website usability to a dimensional schema for organizing variable analysis and the identification of the range of variables. E-Government assessments specifically explore variables germane to government against a backdrop of general website usability heuristics (Nielsen, 1990; Nielsen & Tahir, 2002; Pearrow, 2000). For example, Stowers (2002) conceptually organizes these E-Government variables along six dimensions of website usability: (1) online services, (2) user-help, (3) navigation, (4) legitimacy, (5) information architecture, and (6) accessibility accommodations. After explaining the rationale for identifying the website usability studies referenced, the article reviews these dimensions and typical variables.

Many studies cover broad swaths of U.S. governmental agencies on the topic of E-Government website usability. Generally, these fall into three groups. First, some present website analyses concerning particular aspects regarding the state of E-Government. Second, some provide survey-based website usability reviews. Third, a much more narrowly-focused group analyzes E-Government usability through content analysis. The first two types of studies build knowledge about the developmental status of E-Government and survey responses to researchers, respectively. The third group of studies informs this research. They appraise “manifest content,” content that is visible on the surface (Babbie, 2005). This methodology, to be discussed further in the next section, probes usability

independent of interpretation of the website sponsors and their employees.

A review of six studies suggests variables for constructing website usability benchmarks. The selected studies have been chosen to illustrate the proposed methodology because they use content analysis with dichotomous measures or a generic scale to assess website usability. Further, they represent a range of public agency types (i.e., international, federal, state, and urban).

- *Global E-Government, 2003* (West, 2003a): The survey explores 2166 government websites in 198 different nations, including the U.S. federal website.
- *State of Federal Websites: The Pursuit of Excellence* (Stowers, 2002): The research reviews 148 U.S. federal websites.
- *State Web Portals: Delivering and Financing E-service* (Gant et al., 2002): The inquiry evaluates all 50 U.S. state web portals.
- *State and Federal E-Government in the United States, 2006* (West, 2006): The study covers 1564 state and federal sites (about 30 per state, and 48 federal sites).
- *Urban E-Government, 2003* (West, 2003b): The population researched consists of 1,933 U.S. city government websites in large metropolitan areas.
- *Digital Governance in Municipalities Worldwide: An Assessment of Municipal Web Sites throughout the World* (Holzer & Kim, 2004): The review analyzes the 100 cities worldwide with the highest percentage of internet users (based on United Nations data), including New York City. This research is particularly noteworthy for its introduction of generic scaling to refine comparisons between cities.

Arguably, some may question the “representativeness” of the referenced, content-analysis based studies. However, the thrust of this research establishes a benchmarking usability methodology, rather than suggesting a fixed benchmarking standard. That means the number of studies and the specific agencies examined may be adjusted to discern usability performance nuances. Moreover, such flexibility offers opportunities to modify the variable universe as usability studies evolve and become more sophisticated. Likewise, different dimensional schemas (Stowers, 2002) may be employed in the proposed methodology in response to improved approaches for organizing usability variables.

With the foregoing in mind, the following reviews each of Stowers dimensions and identifies typical variables. The variable range stems from a review of the six studies cited earlier. Association of variables by dimension permits imposition of a coding protocol for usability measurement.

*Online services* refer to those tasks that may be accomplished by electronically contacting an E-Government website 24 hours a day, 7 days per week, via the internet. The extent of online services acts as a critical dimension because it determines the relative website value to users. The conventional wisdom holds that if you cannot “do what you want or need to do” at a website, it has no utility for the user. Hence, a user will not stay long and repeat website visits may be unlikely. The following variables are typical of this dimension: (1) basic information about the jurisdiction, (2) documents, (3) communications with officials, (4) downloadable forms, (5) interactive forms, (6) interactive databases, (7) multi-media applications, (8) e-commerce applications, (9) facility location services, (10) mapping applications, (11) employment information, (12) publications, (13) statistics about the jurisdiction, (14) ordinance code, (15) community-based organization funding information, and (16) webcasts of public meetings (Gant et al., 2002; Holzer & Kim, 2004; Stowers, 2002; West, 2003a, 2003b, 2006).

*User-help* identifies mechanisms that facilitate satisfactory electronic contact and interaction. Failure to provide satisfactory website contact and interaction through user-help tools results in user frustration (Nielsen, 1990; Pearrow, 2000). User frustration impedes website use. User-help tools provide general instructional guidance about moving within a website. Typical variables for this dimension include the

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