Are small cities online? Content, ranking, and variation of U.S. municipal websites

Mary K. Feeney, Associate Professor [a,*], Adrian Brown, Ph.D. [b]

[a] School of Public Affairs, Arizona State University, 411 N Central Ave, Phoenix, AZ. 85004, United States
[b] University of Illinois at Chicago, 411 N Peoria Ave, Chicago, IL 60607, United States

ABSTRACT

Information and communication technologies (ICTs) promise to increase government transparency, accountability, and civic engagement by providing information about government activities and enabling electronic interaction with community members. Drawing from a content analysis of 500 U.S. city websites from two points in time, we examine the prevalence and growth of ICTs used by municipalities ranging in population from 25,000 to 250,000 from 2010 to 2014. We present the results of the content analysis, outlining the prevalence of five categories of ICTs – information tools, e-services, utility, transparency, and civic engagement features - and investigating how type of ICT adoption is related to city size, form of government, and technical capacity. We then rank the 500 cities based on 27 ICT features and note how those rankings have changed over the four-year period. We conclude with a discussion of municipal use of ICTs and what this means for governments and the communities they serve.

1. Introduction

There is a broad interest in technology use in government, in particular how governments can use technology to increase accessibility, transparency, accountability, civic engagement, and so on. Research on the use of information and communications technology (ICTs) to support government operations, engage citizens, and provide government services differentiates between types of technologies (e.g. transaction services, websites, one-way and two-way communication tools); the goals of those technologies (e.g. e-communications, e-participation, and e-democracy); and the antecedents and consequences of ICTs, assessing the variety of outcomes governments expect from ICT use (Layne & Lee, 2001). While researchers are making great strides to understand how ICTs might affect government outcomes, it is not clear that smaller governments are widely adopting ICTs.

Much of the research on e-government concludes that technology is not a silver bullet for bringing government accountability, transparency, and engagement, but rather a tool by which accountable, transparent, and participatory governments can advance those goals (Bertot, Jaeger, & Grimes, 2010; Grimmelikhuijsen & Meijer, 2015; Tolbert & Mossberger, 2006; Welch, 2012). As with all tools, ICTs are only as good as the governments that use them. Organizational culture, internal management, resources, and technological capacity remain critical

predictors of adopting and effectively utilizing ICTs, whether those tools are websites or social networking sites (Dawes, 1996; Feeney & Welch, 2014). So while we know that government capacity and management is important to predicting the adoption of ICTs and we expect that ICTs can enable greater government transparency, accountability, and engagement, we do not have a clear assessment of how much governments, in particular small to medium sized US municipal governments, are actually using ICTs.

Unfortunately, most of what we know about ICTs, e-transactions, websites, and e-services in US government focuses on the federal government and state governments (West, 2008), and in some cases large urban centers (Mossberger & Wu, 2012). We know much less about the ways in which smaller cities are adopting and using technology and which types of cities are more likely to adopt these technologies – two recent exceptions are a study of electronic transparency among municipalities in Texas (Bearfield & Bowman, 2016) and an assessment of inclusiveness among local government websites in Mississippi (Cumbie & Kar, 2014). This research aims to address this gap in the literature, with the expectation that ICT adoption is different for smaller cities, who are less likely to be subject to federal mandates that require ICT adoption among state agencies and which often lack the resources, expertise, and technology infrastructure of larger cities (Cumbie & Kar, 2014). Using data drawn from a 2010 and a 2014 content analysis of 500 US municipal websites, we assess the prevalence and expansion of 27 ICT features; rank the 500 city websites according to ICT adoption; and investigate whether ICT adoption is related to city population, form of government, and technical capacity.

* Corresponding author.
E-mail addresses: mkfeeney@asu.edu (M.K. Feeney), vaebrown11@gmail.com (A. Brown).

This research investigates ICT adoption by assessing a national sample of government websites. First, we outline the literature on website assessments. We then present our method, noting how we code websites and develop measures. Third, drawing from the literature, we assess website content with regard to key ICT features. Fourth, we present results on the ranking of 500 city websites. Fifth, we present the results of our models assessing the relationships between these key ICT features and three predictors: city population, form of government, and technical capacity. We conclude with a discussion of what the findings mean for scholars and practitioners.

2. Literature review

2.1. E-government and website content

Governments use a variety of ICTs to provide services and access to government and enhance perceptions of government. Scholars use one or any combination of methods including surveys and case studies to measure and evaluate e-government evolution. Government website evaluation has been a key method in determining e-government progress and sophistication (Bearfield & Bowman, 2016; Jimenez, Mossberger & Wu, 2012 West, 2008; Youngblood & Mackiewicz, 2012). The study of websites enables researchers and practitioners to establish standards and benchmarks to compare e-government adoption across governments and over time.

Scholars often focus on content, quality, and sophistication when evaluating government websites. However, focusing solely on content without attention to features that promote transparency, security, and accessibility has implications for citizen access, satisfaction, and trust. Website design, functionality, and content can influence users' attraction to and experience with governments online (Youngblood & Mackiewicz, 2012; (Huang & Benyoucef, 2014). Therefore, websites are not only important gauges of e-government quality but also demonstrate commitment to and focus on user experiences with government.

Analyzing the content of websites enables researchers to understand how ICTs reflect government priorities, strategies, and credibility. For example, West (2008) conducted annual assessments and rankings of approximately 1537 U.S. federal and state government websites. The findings suggest an increase in the adoption of features and online offerings over time. West's assessment found that in 2008 73% of government websites had a clearly stated privacy policy, compared to just 7% in 2000. He also noted that in 2008, 48% of websites include areas to post comments compared with 15% in 2000, while websites providing foreign language accessibility increased from 4% to 40% over eight years. West found a shift toward guaranteeing privacy and security while at the same time ensuring accessibility and facilitating engagement for a variety of users. These findings underscore the ways that governments can and are adopting various online tools to connect with the public. In their study of municipal websites in Alabama, Youngblood and Mackiewicz (2012) argued that websites are important in attracting citizens to use e-government and improve external stakeholder perceptions of government while poor websites limit accessibility and usability, which ultimately erodes credibility (Huang & Benyoucef, 2014).

While ICTs that emphasize a combination of features such as information dissemination, usability, accessibility, social networking sites, and civic engagement may enhance user experiences with government, scholars find that local government websites focus largely on information and service provision, with limited emphasis on interaction or engagement (Coursey & Norris, 2008; Jimenez, Mossberger, & Wu, 2012; Norris & Reddick, 2013; Zheng, Schachter, & Holzer, 2014). Jimenez et al. (2012) analyzed websites for the 20 largest cities in Illinois and the 75 largest U.S. cities to examine their potential for fostering civic engagement online. They found that the top performers across the U.S. offered a range of important information features, promoting both online and offline engagement, and had website designs that were user

friendly, accessible, and secure (Jimenez et al., 2012). Still, cities provided limited accessibility for disabled and non-English speaking users and few opportunities to engage citizens online (Jimenez et al., 2012). Similarly, in their 2011 survey of U.S. local governments, Norris and Reddick found substantial increases in the adoption of more traditional ICTs that promote information dissemination and one-way communication (such as e-newsletters, e-alerts, downloadable forms, and council agenda and minutes online), but little advancement with two-way and interactive tools. This echoes recent research (Dolson & Young, 2012; Zheng et al., 2014) that reported widespread use of advanced tools for information and service provision, but lesser use for participation on municipal websites. These findings indicate that compared to seven years earlier, U.S. local governments offer more varied types of ICTs, but few governments had adopted ICTs that promoted two-way communication and engagement such as mobile applications, customer relationship management, moderated discussions, and chat rooms.

While governments appear to lag behind the general public in technology adoption, with the emergence and widespread use of social networking sites (SNS) there remains great potential for government adoption of more complex ICTs such as Facebook, Twitter, and blogs. Globally, by 2013 approximately 76% of OECD governments had adopted Twitter and nearly 53% had adopted Facebook (Mickoleit, 2014). SNS have the potential to transform government, enabling networking, collaboration, public service, and the inclusion of citizens in policy-making processes (Mergel, 2013; Oliveira & Welch, 2013). Municipal websites typically provide a link to SNS pages, which may enable citizens to weigh in on important government issues and policies, connect with government and each other, and share information. In 2011, approximately 64% of Americans reported using social media (Duggan & Smith, 2013) and we see similar increases in social media use in government. For example, Mossberger, Wu, and Crawford (2013) found significant increases in the adoption of Facebook, YouTube, and Twitter, with increases ranging from 250% to over 600%. Generally, there is a consensus among scholars of the potential for websites to connect and enhance citizen experiences with government. For example, Twitter was instrumental in enabling citizen-government collaboration during the 2011 riots in England (Panagiotopoulos, Bigdeli, & Sams, 2014). In another example, U.S. state emergency management agencies have used Twitter to educate citizens, communicate risk reduction strategies, and recruit volunteers (Wukich & Mergel, 2015). However, municipal websites vary in the kinds of technologies and experiences they provide, making it increasingly important to assess the frequency of ICT use on municipal websites. This research investigates the prevalence of ICT features on city websites from 2010 to 2014, presents a ranking of the 500 cities under study; and models the ways in which ICT features have increased or decreased over time.

2.2. Predictors of ICT features

The second component of this research investigates the predictors of ICT features on city websites. Specifically, we investigate the ways in which city websites are a function of city size (e.g. population), form of government, and technical capacity.

2.2.1. Population

Previous research notes that large cities have been leaders in e-government innovation and adoption (Ho, 2002; Moon, 2002). Norris and Kraemer (1996) suggest that municipal size is an important predictor of technology adoption because larger cities have greater need for and resources to implement IT strategies. Larger cities typically have larger budgets, more highly skilled staff, and IT departments with greater resources, making them more likely to adopt electronic mechanisms for service delivery (Norris & Moon, 2005). In sum, larger cities have greater resources and can achieve economies of scale, spreading the costs of adoption and implementation across a larger population (Brudney & Selden, 1995). While much of the research has focused on those with