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# The Role of Social Media in U.S. County Governments: The Strategic Value of Operational Aimlessness

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## ABSTRACT

*This study investigates the influence of citizens' socio-economic characteristics on the presence of social media in county-level government. E-government is ostensibly citizen-driven and therefore variation in an area's demographics would likely impact a government's utilization of emerging technology, such as social media. Despite its transformative potential and widespread adoption, e-government development beyond basic stages has been sluggish. Social media is transforming the nature of interaction among individuals and organizations and has the potential to overcome some of the restrictive challenges of e-government. Understanding if, how, and to what end governments are harnessing social media will help make e-government a citizen-driven, democratic, transparent, and trustworthy platform. County governments are challenged by their size, resource scarcity, heterogeneous service area (urban and rural), and varying population density; thereby preventing them from gaining a critical mass of online users. By exploring social media's role in e-government as related to citizen demographic factors, this study reveals an important paradoxical role of social media in government: operational ineffectiveness as a necessary precursor for exception events. Additional results reveal the presence of digital divide - counties with higher median household income and educational qualification tend to have social media presence in their e-government sites, which is also not related to population growth of the counties.*

*Keywords: Citizen Demographics, County Government, E-Government, Social Media, United States*

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## 1. INTRODUCTION

At over 20 years old, electronic government, or e-government (EGOV) is a transformative force and global phenomenon of strategic importance (Norris & Lloyd, 2006; Oyedele & Koong, 2005; Borrás, 2004). EGOV is the use of Information and Communication Technology (ICT) in the public sector as a means to deliver government services (Marchionini, Samet, & Brandt, 2003) and to improve service quality, integrated service, and market development (Grant & Chau, 2004). The tradition of EGOV research grew from its beginnings as a nascent field (Norris & Lloyd, 2006) to the increased rigor and development of theoretical constructs (Rana, Williams, Dwivedi, & Williams, 2011) and integrated theoretical models (Rana, Dwivedi, & Williams, 2013). Common components of the EGOV artifact in this tradition of research are (1) the technology behind EGOV, (2), the behavior and perspective of involved stakeholders, and (3) the outcomes - successes and shortcomings - of EGOV initiatives (Chiang & Liao, 2009; Morgeson & Mithas, 2009; Teo, Srivastava, & Jiang, 2008; Roy, 2006; Grönlund & Horan, 2004).

The successful interaction of these three components is considered to have far-reaching transformative potential: from one-way non-interactive information services to two-way transactions, being a one-stop portal for all government services, empowering citizens by increased participation and public discourse, and reducing corruption by increasing transparency and citizen trust in government (Teo et al. 2008; Grönlund & Horan, 2004; Macintosh, 2004; Ho, 2002). Despite the transformative potential and available technologies, governments seem unable to move past the most basic EGOV functions (Bonsón, Torres, Royo, Flores, 2012; Norris & Reddick, 2012). As Cumbie and Kar (2014) revealed, local level EGOV websites are frequently non-existent or non-inclusive which limits their transformative potential. Social media (SM) has emerged as a potential technology to advance the development of EGOV and bridge the divide of interaction between citizen and government.

### 1.1. Social Media in Government

As the ICT environment continually changes, governments are embracing SM as part of their EGOV strategies. SM has become the platform for user-generated content published online, micro-blogging (e.g., status updates and tweets), establishing public and private communication networks, and extends to mobile computing to incorporate location-based services. These allow users to have both a high degree of connectivity and access to selective information and to generate and share multimedia content in near real-time. The qualities of SM seem like a natural fit with EGOV goals of information provision, collaboration, and participation. Because SM is seen as a vehicle to increase effectiveness and legitimacy by communicating with internal and external stakeholders (Mijer & Thaens, 2013), researchers have explored the adoption and use of SM in government (e.g., Hong, 2013; Mijer & Thaens, 2013; Mossberger, Wu, & Crawford, 2013; Oliveira & Welch, 2013; Reddick & Norris, 2013; Bertot, Jaeger, & Hansen, 2012; Bonsón et al., 2012). Past research concluded the same patterns for SM as EGOV in general: SM is present, can and has produced positive outcomes (Mijer & Thaens, 2013), but is largely in an early and experimental stage of development (Bonsón et al., 2012) and expectations fall short of reality (Haahr, 2013).

### 1.2. Local Government

Local government is an important part of the overall government landscape with its high degree of contact between government and citizens and greater likelihood of citizen participation. Though local governments are connected and responsive (Fan, 2011) they generally face financial problems and geographical constraints due to smaller citizen base and operational size. For instance, governments that provide service to larger population service areas tend to have more resources and a larger customer-base. Therefore, developing an online transactional service such as automobile registration renewal would be more attainable for larger governments because the costs of developing and

administering the service will be distributed over 1 million citizens versus 10,000 citizens, *per se*. The Internet helps overcome geographical barriers, allowing businesses to reach new customer markets; however, the same rule does not translate to local governments. If a citizen's county of residence does not have online capability for automobile registration renewal, the citizens cannot simply search for and use an online service from another county. This notion of local government's exclusive but restricted service purview creates a unique set of circumstances that draw the focus of EGOV research to the local level.

Past researchers asserted that local governments are frequently ignored or garner less attention (Eskandar & Raman, 2013; Cassel & Hoornebeek, 2010). Local EGOV usually means municipalities, city agencies or departments, or county governments; counties are conspicuously absent from EGOV studies. While not conclusive, literature searches for county level EGOV and SM were not fruitful; however, past research does include counties among a larger set of local governments/agencies under study (Reddick & Norris, 2013; Cassel & Hoornebeek, 2010). The use of SM in EGOV was also absent in a wide-reaching EGOV literature review (Rana et al., 2011). County governments have the same attributes that make municipal governments important: proximity to citizens and direct impact on their lives. However, counties are distinguished from municipalities and government agencies by having a more heterogeneous service area; counties may include both urban and rural areas and offer both distinct governmental services and may overlap with other jurisdictions.

The characteristics of counties, e.g. more dispersed populations, may make SM a tool to ameliorate the problem of connecting with citizens. On the other hand, the challenges of effectively using SM may exacerbate other problems, such as increasing the digital divide among SM adopters and non-adopters. As warned in past research, local governments are left out of national strategy and the poorest of areas are likely to be ignored (Kohlburn, Fiel,

& Boentgen, 2013). The success of EGOV is influenced by citizens' socio-economic conditions, such as income, race/ethnicity, education, and behavioral issues (i.e. lack of interest or trust in electronic services) (Akman, Yazicib, Mishraa, & Arifogluc, 2005; Lofstedt, 2005). SM's usage is also affected by citizens' age, gender, and race among other demographic factors (Duggan & Brenner, 2013).

### 1.3. Research Questions

Building on these four notions, that (1) EGOV has untapped transformative potential, (2) SM also has transformative power, (3) the paucity of county-level research, and (4) the influence of citizens' socio-economic factors on both EGOV and SM adoption, this study investigates the use of SM by county level governments and the influence of citizens' demographic factors. Recognizing that SM must be present prior to being used, this study initially constructed and operationalized a government's Social Media Presence. While the extent of SM use or its effectiveness is certainly of greater interest, a pilot study revealed not just a low adoption rate of SM among county governments (only 10 out of 62) but also the phenomena of SM being apparently present but in actuality not available for use (Cumbie & Kar, 2014b). This misdirection of Social Media Presence necessitated further development of the Social Media Presence construct to be more than a binary value of present or absent. The first question addressed in this study is:

What is the extent of Social Media Presence in county governments?

Addressing this question will reveal the extent of adoption of SM in county government but will not give insight into the factors driving SM presence in county governments. If EGOV is a citizen-driven phenomena, then it should follow the socio-economic makeup of a county's citizens and be connected with the county's SM presence. The second research question of this study investigates:

Do citizens socio-economic factors influence a county government's Social Media Presence?

The implications of addressing these questions will help understand the current role of SM in local governments and determine if it is a transforming force for these governments. SM may be a bridge to break the seeming stagnation of continued EGOV development and unlock its transformative potential.

## 2. RESEARCH BACKGROUND

Halachmi and Holzer (2010) described that there is no one-size-fits-all EGOV solution. The technological component of EGOV includes the Internet, web-based applications, new and virtual information technology platforms and applications, and mobile computing. However, the preponderance of EGOV research focus is on a government agency's official website (e.g., Morgeson & Mithas, 2009; Sung, Liu, Liao, Liu, & Yuan, 2009; Tan & Benbasat, 2009; Teo et al., 2008; Rao, Chai, Herath, & Park, 2006; Wang, Bretschneider & Gant, 2005), which is the primary channel of e-service delivery. The general conclusion of past research is that local EGOV initiatives are mostly online, but fall short of their conceptualized goals (Cumbie & Kar 2014; Norris & Reddick, 2012; Fan, 2011; Scott, 2006; Moon, 2002). Despite falling short in some areas EGOV has achieved successes, such as gains in efficiencies and by providing online transactional services. Therefore, researchers continue to evaluate EGOV success based on gains in maturity and sophistication.

### 2.1. E-Government Success

While governments are different from businesses, they do share similarities. According to Parson's Typology (1960) of organizations based on societal function, governments function for the *attainment of goals* in society and business firms are oriented to *economic production* and play an adaptive role in society (Scott,

1981). Goal attainment revolves around setting and implementing goals and adaptation is about acquiring resources. Despite the differences in societal functions, both types of organizations share common characteristics and theoretical overlap.

The information systems (IS) discipline focuses primarily on IS in business organizations and often pursues the theoretical construct of *IS Success* as the ultimate dependent variable (Delone & McLean, 1992; 2003). With its obvious and strong connections to and dependencies on ICT, EGOV research draws from the theoretical base and body of knowledge from IS research. In fact, past research pointed out the use of IS adoption and success theories in EGOV (Rana et al., 2011). Regardless of the overlap, government organizations and EGOV are distinct from their business and e-commerce counterparts.

Layne and Lee's (2001) EGOV maturity model identified the features that demarcate the stages of EGOV advancement and prompted many subsequent evaluation studies (Lai & Pires, 2010; Nasi & Frosini, 2010; Pina, Torres, & Royo, 2010; Alshawi & Alalwany, 2009; Sung et al., 2009; Agarwal & Venkatesh, 2002; Scott, 2006; Moon, 2002; Welch & Wong, 2001). Technological adoption by governments or citizens is a necessary first step and one that precedes higher-order stages of EGOV such as citizen engagement. Recognizing the differences of businesses and EGOV, the Delone & McLean IS Success Model (1992, 2003) was adapted to the government context to incorporate the construct of *trust* which is of utmost importance for citizens to buy-in to utilizing EGOV systems (Rana et al., 2013). Customer satisfaction, or rather, citizen satisfaction, is another construct brought from the business to the government context (Seng, 2003). With adoption as a precursor to the end goal of success for EGOV, SM is now adopted by many governments and agencies as part of their overall EGOV portfolio. The same progression holds true to achieve SM success; first comes adoption and then usage.

## 2.2. Social Media Presence and Use

Among large cities SM adoption has drastically risen from 2009 to 2011; Facebook (Fb) from 13% to 87% and Twitter (Tw) from 25% to 87% of 75 analyzed cities (Mossberger, Wu, & Crawford, 2013). A survey of 1,326 local (city and county) governments with populations greater than 10,000 indicated a SM adoption rate of 67.5% (Reddick & Norris, 2013) among citizens while SM usage among city managers or departmental directors was found to be 88% for 791 cities (Oliveira & Welch, 2013). These findings are based on survey responses or contextual analyses of EGOV home pages looking for evidence of a SM artifact, that is, a link to a common SM platform. The mentioned SM platforms, services, and/or products from this past research were: Facebook, Twitter, YouTube, LinkedIn, Govloop, Skype, Flikr, Instant Messaging, MySpace, and GoogleDocs. A pilot study revealed Fb and Tw to be the most common SM services in use (Cumbie & Kar, 2014b).

While SM presence appears commonplace, research found that “[h]aving a social media icon on a webpage does not demonstrate usage” (Oliveira & Welch, 2013, p. 403). Analysis of SM content of local governments in the European Union found that dialogue between government and citizen was in its infancy and SM is still experimental and non-responsive to citizen demand (Bonsón et al., 2012). Likewise, Reddick and Norris (2013) found SM to be primarily a one-way communication channel; the “push” tactic identified by Mergel (2013). In this strategy, SM is used at the departmental level to broadcast with little interaction among stakeholders and little concern about SM policy. Yet while at an early stage, SM in government has value, for instance, in times of crises it can be used as a valuable notification tool (Kavanaugh et al., 2012) or to increase visibility of elected officials (Hong, 2013). While SM effectiveness or success is the paramount goal, it is preceded by being present and available for use. The

following distinction between SM usage and presence are proffered here.

Social Media Usage (SMU) is the extent to which content is available and utilized in a social media service per a particular entity. This includes measures of recent updates, sustained content, network size, interactivity and content co-production, and content importance.

Social Media Presence (SMP) is the extent to which a particular entity indicates the availability of a social media service and that the service is discoverable, accessible, and what it is purported to be.

The presence and subsequent usage of SM in EGOV are neither required nor given; adoption of these is variable. EGOV is said to be driven by citizen demand (Alshawi & Alalwany, 2009) and SM is driven by user-created content. The variability of SM presence and usage is therefore influenced by characteristics of the user base. In the case of EGOV, the user base is the citizens within a particular government’s geopolitical scope of influence.

## 2.3. Social Media and Citizen Demographic Factors

Socio-economic characteristics of users are frequently investigated as factors of EGOV adoption or usage and include age, education, race, and income (Rana et al., 2013; Carter, Schaupp, Hobbs, & Campbell, 2012; Rana et al., 2011; Cassel & Hoornbeek, 2010; Furuli & Kongsrud, 2007). The same socio-economic factors studied for EGOV in general are also relevant to SM. In addition to support for education level and partial support for race and income, population density was also found to be relevant in a study of local government web presence (Cassel & Hoornbeek, 2010). Regarding the overall demographic of a geopolitical area, the area’s total population and population growth are also likely relevant to SMP.

The greater an area’s population, it is likely there is a greater amount of available resources because of economies of scale, a larger tax-revenue base, and funding tied in with population numbers. Also, an area’s total

population growth may also lead to a growth in resources and a greater need to communicate with incoming citizens - presumably via SM. The higher population density of an area would mean more people in closer proximity, a factor that would likely bring people together in a social setting and hence be accompanied by SMP. As a technological adoption, SM also would likely follow the same pattern of initial adoption by people with higher income, higher education level, and within a certain age group. These hypothesized relationships are articulated here:

- H1:** Positive population growth is positively associated with social media presence.
- H2:** Population is positively associated with social media presence.
- H3:** Population density is positively associated with social media presence.
- H4:** Higher educational qualifications are positively associated with social media presence.
- H5:** Median household income is positively associated with social media presence.
- H6:** The ratio of citizens of 18-45 years of age to other citizens is positively associated with social media presence.

### 3. RESEARCH METHOD

With an identified set of seven demographic factors hypothesized to impact a county government's SMP (defined in the previous section), the research method here follows the research design prescribed in previous studies to evaluate EGOV by coding the presence or absence of predetermined coded criteria (Eskandar & Raman, 2013; Roman & Miller, 2013; Cassel & Hoornbeek, 2010). Whereas those previous studies looked at e-democracy, e-readiness, and EGOV websites, respectively, this study evaluated SM presence in government by first searching for a hyperlink to a SM service from the official government home page similar to the approach used by Mossberger, Wu, and Crawford (2013). The following sections describe the formulation and randomization of

the sample of United States (U.S.) counties, the operationalization and scoring procedures of the SMP construct, and finally the extraction of county demographic data. Once scored and collected, the hypotheses were tested using multinomial regression analysis.

#### 3.1. Data Sources and Random Sampling

To empirically address the research questions pertaining to the presence of SM in county governments with regard to county demographics, an initial random sample of 25% of the U.S. counties was selected. The sampling procedure began by procuring a list of all 3,147 U.S. counties from the U.S. Census Bureau (2010). The list includes county and county equivalencies, e.g., Alaska has Census Areas and Boroughs and Louisiana has Parishes. Each entry on the list was then assigned a random number using a spreadsheet random function and then sorted in ascending order. Informed by the results of a pilot analysis of 62 counties (Cumbie & Kar, 2014b), a scoring instrument was devised. Each county in the list was assigned a score corresponding to SMP, which was determined by using the scoring instrument.

From the sample of 794 counties, 727 were found to have an official EGOV website (91.56%) and of these, 130 were found to have some indication of a SM service on the site. A majority, 597 of the 794 (75.19%), of county EGOV websites did not have any SM presence. Of the 130 websites with an apparent SM service, 81 had both Facebook and Twitter, 42 had Facebook alone, and 7 had just Twitter. These preliminary findings required further scrutiny to determine the extent to which the SM is indeed present and not misdirection.

#### 3.2. Operationalization of Social Media Presence

Social Media Presence (SMP) was defined as the extent to which a particular entity has a discoverable SM service and the extent to which the service is what it purports to be. In this study, the entity of interest is U.S. county governments

and the SM services under study are Facebook (Fb) and Twitter (Tw). These two SM services were selected because of their popularity; they represent two forms of SM (Fb is foremost a social network and Tw is SM/micro-blogging tool); and the preliminary findings from Cumbie and Kar (2014b) indicated these services as the two most common among county governments.

The website is the fundamental gateway to citizen-facing EGOV services (Eskandar & Raman, 2013; Kohlburn et al., 2013; Roman & Miller, 2013; Rana et al., 2011) and therefore, if SM is in use for county-level governments, there should be information on the EGOV website regarding SM. EGOV websites for the counties under study were located using the following steps: (1) a Google search query of the county name and state abbreviation was conducted, (2) the first page of search results was examined for a clear and distinct county level website; if no site was found, the county name was cross-referenced with Wikipedia or a higher level government website (e.g., state) to locate a link to the county website, (3) each site was visited to verify it as the official county government website, and (4) finally the website address was recorded. These steps resulted in a final list of all discoverable and undiscoverable U.S. county websites. The scoring process for discoverability included either noting the website as undiscoverable or recording the address of discoverable county EGOV websites. Table 1 summarizes the categories and definitions that comprise SMP.

### 3.2.1. Initial SM Presence

Following the identification of a discoverable county website, the website homepage was examined for evidences of either Fb or Tw services. Only the home page was examined because this is the preeminent page of sites (United States, 2006; Thompson, McClure, & Jaeger, 2003), and as a one-stop portal, navigation to a SM service should be explicitly indicated on the home page, whether as a direct link to a service or via a top-level menu. In other words, instead of scouring the entire website for SM services, only clear prompts of SM service's name, logo, or words such as "social media" on the homepage were looked for. In case of an intermediary page, for example, if a link directed to a county SM page which then directed to the SM services, then points were awarded for criterion being present on either the home page or intermediary page but not for both.

Three scoring criteria were used for each Fb and Tw - a maximum score of one point was assigned for each criterion indicating the initial presence of each SM service and no points for absence of the criterion per service. The resulting score for *Initial Fb Presence* could potentially range from zero to three and the same for *Initial Tw Presence*. The first criterion was a SYMBOL of either SM service: any indication of either the presence of either Fb or Tw using words, logos, "buttons," abbreviations, or the like. The second was the explicit use of WORDS, "Facebook" or "Twitter." This is an important

Table 1. Social media presence categories and definitions

| Category                        | Definition   |
|---------------------------------|--|
| Social Media Service            | Facebook and/or Twitter  |
| Entity                          | U.S. County Governments, excluding particular departments, e.g., Circuit Court, Libraries, Sheriff, etc. |
| Initial Social Media Presence   | Clear and present indication of a social media service via an official county webpage                    |
| Extended Social Media Presence  | Additional indication of a social media service via an official county webpage                           |
| Purported Social Media Presence | Functional navigability and open access to a social media service exclusive to the county                |

navigation feature for those less familiar with just a company's logo (e.g., Twitter's bird logo).

Though popular, public awareness of the nuances of SM is not a foregone conclusion among non-users. Therefore, coded or jargon symbols without explicit words speak only to those already familiar with the service, contrary to EGOV's marquee feature of being all-inclusive. This point led to the final criterion of the symbols or words being **DISTINCTIVE** and recognizably discernible on the page. This was a direct lesson from the pilot analysis which revealed the tendency for websites to incorporate SM logos in the same color scheme and style of the page. As a result, the SM logos blended in with the background and are susceptible to being overlooked or invisible to assistive technologies such as a screen reader for the sight impaired. The outcome of this step was one score per counties of *Initial Fb Presence* = [0,3] and *Initial Tw Presence* = [0,3].

### 3.2.2. Extended SM Presence

In addition to the initial presence of a SM service, there are additional characteristics by which the particular service stands out more so, described here as *Extended SM Presence*. For this, Fb and Tw were scored together and did not receive individual scores; if *either* of those services exhibited the characteristic one point was scored. For instance, if just Fb exhibited an additional characteristic but Tw did not, a score of one was still given. Likewise if both had stated policies, still only one point was awarded. There were three scoring criteria for *Extended SM Presence*: FOLD, GUIDANCE, and POLICY with a possible range of scores from zero to three.

The first of three criteria of *Extended SM Presence* is for any of the *Initial SM Presence* indicators to appear "above the fold" (FOLD, for short) of the webpage. Like a folded newspaper, the most important headlines appear on the top half of the page and the same can be said for a website having the most important content above the fold (United States, 2006). For a browser size set to 600 pixels, one point

was given if *Initial SM Presence* was visible without scrolling. If indicators appeared in two places, a point was still awarded if any of them appeared above the fold. While not required for a county to exhibit SM presence, displaying the SM service above the fold does show increased importance of the service and therefore a greater degree of SM presence.

The second criterion scored was the presence of GUIDANCE which are actionable instructions directing a user of what to do. Instead of simply presenting a nondescript logo or link, guidance is present with instructions such as "Follow Us," "Find Us," or "Like Us." Admittedly these words fall short of an instruction and are not overly descriptive, but they do provide a minimal level of guidance to a user.

Lastly, the presence of a POLICY was scored. A stated policy goes well beyond words of guidance to the user and states the purpose of the SM service, terms of use, any related laws or regulations. The presence of a POLICY may appear as a link to a written statement that explicitly explains the role and function of the SM service.

### 3.2.3. Purported SM Presence

For counties that exhibit initial or extended SM presence, the next step was to evaluate if the services are, in fact, available as claimed. This step became necessary after the pilot study in which many SM services were advertised but were unavailable based on reasons represented in the scoring criteria. If no problems were experienced and the indicated SM service was found, one point was given to indicate that the Purported SM Presence was found as expected. If navigation and access to the purported SM service was hindered, a score of negative one was assigned. The score for Purported SM Presence (either one or negative one) was then multiplied with the sum of Initial and Extended SM Presence Scores. A negative score is indicative of a SM service being apparently present but then unable to be found or used.

The first criterion for Purported SM Presence is NAVIGABILITY. Simply put, does the

link available from the county EGOV website provide easy navigation to the SM service? If some links were broken and directed to a nonexistent webpage or they were inert with no action occurring on the user's click or the user was directed to a placeholder message such as "coming soon" or "under construction", a score of negative one was assigned.

The second criterion is OPEN ACCESS - a link to a SM service may work, but the user is then prompted to login or create an account. In some cases the county EGOV website may direct the user to the service's main page - facebook.com or twitter.com - and not a specific account for the county. A score of negative one was assigned for services that required users to sign-up or sign-on and are not readily available to the general public.

The next criterion is EXCLUSIVENESS which denotes SM services that are not for the expected county government. Some governments maintain several SM accounts per department (e.g., circuit court, sheriff's department, parks, libraries, etc.) without any clearly discernible county account. The presence of many different accounts on a county website may represent the lack of uniformity described by van Deursen (2007) but is not scored as a negative one *unless* there is no single account exclusively for the county. Having many accounts per a SM service detracts from the one-stop paradigm of EGOV being a single access point to multiple departments (Kohlburn et al., 2013).

### 3.2.4. SMP Score

Following the scoring along each category and criterion, the total SMP score was calculated by adding the product of the *Initial Fb Presence Score* and the *Purported Fb Presence Score* with the product of the *Initial Tw Presence Score* and the *Purported Tw Presence Score*. To this subtotal the *Extended SMP Score* was then added. The product of the *Initial Fb Score* [0, 3] and the *Purported Fb Score* (-1 or 1) resulted in possible scores of -3 to 3. The same was true for Tw: *Initial Tw Score* [0, 3] multiplied

by *Purported Tw Score* (-1 or 1). These two subtotals were then added together and then added to the *Extended SM Score* [0, 3], resulting in possible total *SMP Scores* of -6 to 9.

$$SMP = (\text{Initial FbP} \times \text{Purported FbP}) + (\text{Initial TwP} \times \text{Purported TwP}) + \text{Extended SMP}$$

The resulting range of scores indicates the degree of SMP. The scores of -6 to -4 are considered a strong *misleading* presence and scores of -3 to -1 are *misleading* to a lesser extent. The score of 0 indicate no SMP or mixed results (e.g., positive for one SM service, negative for another) that cancel each other out. Positive scores ranging from 1 to 3 indicate a SMP, 4 to 6 indicate a strong presence, while 7 to 9 indicate both a strong and an extended presence.

### 3.3. Demographic Data

The citizen's socio-economic conditions, such as income, race/ethnicity, education, and behavioral issues (i.e. lack of interest or trust in electronic services) influence their accessibility to EGOV, thereby resulting in the failure/success of EGOV (Akman et al., 2005; Lofstedt, 2005). Though gender differences among citizens do not influence their usage of EGOV, educational qualification and income of an individual are major predictors of EGOV use for different purposes (Jaeger, 2003; Losh, 2003; Hqsing & Selhofer, 2002; Levy, 2002; Mellor, Par, & Hood, 2001). Because these studies indicated that socio-economic factors of citizens determine their usage of EGOV, it is pertinent to explore the extent to which these factors also influence the success of SM in local governments. In addition, total population of a county, its density and population growth were also used as potential factors influencing citizens' use of SM because population is said to be a factor in EGOV, with larger areas potentially having greater need or available resources. It is assumed that the association of demographic factors with EGOV websites usage will likely extend to SM as well.

From the socio-economic data available at the county level from the 2010 U.S. Census, the following variables were extracted: total population, total population in the age groups of 18-45 years and above 46 years. From the 2011 American Community Survey data, income data (median household income, number of people with income in the ranges of <\$25,000, \$25,000-\$50,000, \$50,000-\$100,000, and >\$100,000), and educational qualifications (percentage of total population with a bachelor's or higher degree in the age group of 25-34 years and 35-44 years) were extracted for each study county. From these variables, other variables were derived to test the hypotheses - the percentage population growth each study county has experienced during 2000-2010, population density (total number of people per square kilometer), ratio of population in the age group of 18-45 years to the remaining population in other age groups. This approach is similar to the Bonsón et al. (2012) study of SM in larger European Union municipalities that was analyzed together with national level ICT demographic information, e.g. Internet penetration.

#### 4. ANALYSIS AND RESULTS

The collected SMP scores and demographic data were analyzed in a multinomial logistic regression model using IBM SPSS Statistics, Version 22. The analysis procedures included variable transformation to achieve normality in variable distribution. The regression model was tested for fit, which although overall poor, did yield some statistically significant results. These are presented and discussed here.

Prior to the regression analysis, the probability plot (P-P) of each variable was visually examined for normality. As expected (Cumbie & Kar, 2014b; Cassel & Hoonbeek, 2010), population and population density violated normality assumptions and therefore were transformed using the natural log function to achieve normality. Because the SMP ordinal dependent variable was initially categorized into six categories, ordinal logistic regression

was initially selected to explore the relationship between SMP scores and demographic factors; however, the proportional odds assumption (that relationships between each pair of SMP group are the same) was violated as evidenced by the significant results of a Test of Parallel lines:  $\chi^2(24, N=794)=97.28, p<.0001$ ). Furthermore, the number of cases was low for a number of observed SMP categories, e.g., only 5 observation for SMP score = 1 (strong misdirection) and 10 for score = 6 (strong presence). Therefore, a multinomial logistic regression model was used to explore the relationship between SMP scores and demographic factors.

To increase the number of observations per category while retaining the conceptual meaning, the seven SMP categories were reclassified into just three categories - *misdirection* (negative SMP score), *no presence* (SMP score of zero), or *presence* (positive SMP score). The resulting number of cases per category was as follows for the 794 cases: *misdirection*,  $n = 26$  (3.3%); *no presence*,  $n = 672$  (84.6%), and *presence*,  $n = 96$  (12.1%).

The data were then assessed for fit in a multinomial logistic regression model. The Likelihood Ratio (LR) chi-square test result indicated at least one demographic variable was significant (e.g., not equal to zero) in the model:  $\chi^2(30, N=794) = 142.55, p < .0001$ . A coefficient of determination ( $R^2$ ) value is not available for multinomial logistic regression but several "pseudo"  $R^2$  calculations are. The results for the Cox and Snell ( $R^2 = 0.164$ ), Nagelkerke ( $R^2 = 0.228$ ) and McFadden ( $R^2 = 0.141$ ) pseudo  $R^2$  are not straightforward in their interpretation; however, taken together, all three together indicated a low degree of model fit to the data.

Multinomial logistic regression analysis compares each category of the dependent variable to a reference category. In this case the SMP category of *no presence* occurred most frequently (84.6%) and therefore was selected as the reference category. Further LR tests per each demographic indicator showed that three of the six variables were significantly different from zero in the model. The natural log trans-

Table 2. Summary of hypotheses testing results

| No.  | Factor             | p value | SMP2  | Decision      |
|--|--------------------|---------|-------|---------------|
|  |                    | 0       |       |               |
| H1   | Population Growth  | 0.592   | 0.513 | Reject        |
| H2   | Total Population   | 0.007   | 0.947 | Reject3       |
| H3   | Population Density | 0.817   | 0.003 | Retain        |
| H4   | Education Level    | 0.25    | 0.078 | Retain at 10% |
| H5   | Income             | 0.059   | 0.023 | Retain        |
| H6   | Age                | 0.929   | 0.879 | Reject        |
| 1having misleading SMP in reference to no SMP          |                    |         |       |               |
| 2having SMP in reference to no SMP                     |                    |         |       |               |
| 3significant but contrary to hypothesized relationship |                    |         |       |               |

formation of Total Population  $\chi^2(2, N = 794) = 27.17, p = 0.024$ , natural log transformation of Population Density  $\chi^2(2, N = 794) = 9.59, p = 0.008$ , and Income  $\chi^2(2, N = 794) = 7.32, p = 0.026$  were each significant at the 5% *p-value* level. Education  $\chi^2(2, N = 794) = 4.70, p = 0.096$  was significant at a 10% level and Population Growth  $\chi^2(2, N = 794) = 0.87, p = 0.648$ , and Age  $\chi^2(2, N = 794) = 0.34, p = 0.983$  were not significant.

These results prompted further investigation of the parameter estimates for comparison of the reference category. With regard to the reference category of not having a SMP, the total population of a county indicated that the greater the population, the greater the likelihood of having a *misdirection* of SMP: Population  $\chi^2(1, N = 794) = 7.36, 1, p = 0.007$ . In contrast, the relationship between not having a SMP, both the population density and the median income of a county indicated that the greater the density or income, the greater the likelihood of having a successful SMP: Density  $\chi^2(1, N = 794) = 9.07, p = 0.003$  and Income  $\chi^2(1, N = 794) = 5.16, p = 0.023$ . Furthermore, the significance of education  $\chi^2(1, N = 794) = 3.10, p = 0.078$  at the 10% level indicated, although not as clearly, that relative to not having a SMP, higher education levels were associated with a greater likelihood of having successful a SMP. The full output of the analysis is available in

the appendix, Table 2 summarizes the results in terms of the hypotheses.

The interpretation of a multinomial logistic regression is not as straightforward as linear regression; each model parameter is tested per each dependent variable category and results are interpreted relative to one reference group category. Relative to not having SMP, the median income, population density, and education level (although not as strong) of a county's citizenry seemed to be associated with having a successful SMP. Interestingly and contrary to the expected relationship of a county's total population and SMP, relative to not having SMP, was associated with misdirection in the SMP.

## 5. DISCUSSION

From a random sample of all U.S. counties (794 of 3,147, or 25.25%) an underwhelming 130 of the 794 (16.37%) county websites indicated some degree of SMP. These were further scrutinized and scored for initial, extended, and purported SM presence. These results inform the question of *What is the extent of Social Media Presence in county governments?* The results align with previous research findings that SM in EGOV though currently is present, it is either at basic or exploratory stage, and very often they are operationally ineffective and misleading.

The next step of the research delved into the question - *Do citizen socio-economic demographic factors influence a county government's Social Media Presence?* - which was explored using six hypotheses. The results of the analysis revealed significant support for two of the six hypotheses (H3 and H5), slight support for one hypothesis (H4), and a significant but opposite result for one hypothesis (H2). These results suggest that SM implementation at county government follows a "quick win" strategy and possibly widens the digital divide. Additionally, the impact total population at county level has on SM presence warrants further investigation as it produced a result contrary than expected. All results of the analysis should be interpreted with caution since the data exhibited a poor fit to the multinomial regression model.

In summary, this study further advances the understanding of the role of SM in county government; it also indicates that SM is not the "killer app" to drive further development in EGOV. This study also revealed that issues of EGOV via third-party services must be addressed in terms of citizen willingness to participate via third-parties or even via official EGOV channels. Lastly and in spite of the apparent operational ineffectiveness and aimlessness of SM in county government, there is latent value for those counties that have at least attempted to establish SMP for times of crisis and exception events.

### 5.1. Underwhelming SM Adoption in County Government

Of the 794 sampled U.S. counties, 130 had indications of a SM service (81 both Fb & Tw, 42 Fb alone, and 7 with Tw alone). This is a low adoption rate at 16.37% among all the sampled counties even though 727 (91.56%) counties were found to have official EGOV websites. Thus it can be concluded that SMP is considerably behind EGOV website adoption. Even for those counties that indicated the presence of a SM service, the availability of SM service was problematic and misleading. Of the 130 sites with indications of SMP, 43 had at least one

service that was non-functioning and therefore misleading (indicated by a negative SMP score). Removing these problem cases, only 87 of 794, or 10.96% had a verifiable SMP. The conclusion is that there is a low likelihood for a county EGOV website to have SMP and there is only a two in three chance that it will work. These problems speak to the operational ineffectiveness of SM in county government.

### 5.2. County SM is Operationally Ineffective

With the high chance that a purported SM service will not actually be present as indicated on a county government website, the value for promoting the ideals of EGOV such as organizational efficiencies or citizen engagement are greatly diminished. Citizens attempting to locate and use a county SM service will be discouraged when the service is seemingly available but then actually not present. The degree of misdirection was captured in the SMP scoring under the Purported SMP.

Each instance of a misdirected SMP speaks to operational ineffectiveness. For instance, take the criterion of EXCLUSIVENESS - SM services are expected to be exclusive for a county. As county governments are comprised of many different departments and agencies, not unlike commercial enterprises, users expect "front office" integration and that the ICT masks the complexities (Kohlburn et al., 2013). However, having multiple SM accounts, one per agency detracts from the goal of integration and is more problematic when there is not at least one for the overarching county SM service although EGOV purports to be a one-stop portal (Haahr, 2013). Likewise, having a link for Fb or Tw on county home page is expected to lead to that county's SM account and not a particular agency or department within the county. This is a clear exhibit of lack of "horizontal integration", which as described by Layne and Lee (2001) is a sign of advanced EGOV.

The claim of county government's SM use being operationally ineffective is further based on the lack of a stated goal or purpose of

the SM services. SM can be effective and hold strategic value when aligned with mission goals (Witman, 2014) yet of the sampled counties only 14 had a stated SM policy and of those, five were misleading and not actually present. The policies typically outline terms of usage but still do not state a clear purpose or goal of incorporating SM in county EGOV. Baring a clear and transparent purpose for SM, there is little that can be said about its value to the government or the citizens.

### 5.3. SM and the Digital Divide

The data supported hypotheses three and five: population density and median household income were found to be positively associated with SMP. Adopting SM for a county may be what Kohlburn, Fielt, and Boentgan (2013) referred to as “quick wins” versus substantive transformation. This is along the lines of following the “start up” strategy for a niche group while deferring accessibility issues (Cumbie & Kar, 2014). In this instance, the presence of digital divide refers to the gap between those willing and able to get online and those who are not. In case of government, the digital divide is of concern because EGOV initiatives are meant to be public services and not prohibitive of any user group due to age, disability, income, or other characteristic.

The findings provide evidence that counties with a greater extent of SMP are those with higher income and higher education levels. While this does not mean that SM services necessarily exclude specific user groups, it does imply that poorer counties are less likely to have access to their governments via SM. The positive association of population density with SMP further suggests that counties with higher density are more likely to have SM services. The implication is that urban areas are favored over rural areas; the latter being less likely to have broadband or wireless network services, thereby widening the digital divide by catering to those with Internet connectivity and leaving others out.

### 5.4. Total Population and Misleading SMP

The finding that a county’s total population was negatively associated with SMP in comparison with counties with no SMP is puzzling. Intuitively, greater size would lead to greater access to resources and achieving higher economies of scale; however, this was not the case among the sampled counties and analyzed data. The only conclusion for this is that SM is not a viable channel to or from the government and areas with greater populations utilize other forms of EGOV or traditional government service channels.

Technology implementation in government is met with resistance (Ben & Schuppan, 2014) and might require structural changes. Changes to organizational structure are not easy for governments that are limited by laws regarding data sharing (Gant & Gant, 2002) that prevent interaction and integration between government departments and agencies. Also, governments lack dedicated SM departments or managers (Haahr, 2013). Whereas the expected result was to find more SMP where more citizens were, given the technological challenges governments face, this finding leads to the conclusion that SM may in fact be a distraction from already established processes.

### 5.5. Third Party Contradictions

Among the contradictions of SM in EGOV identified by Haahr (2013) is the issue of proprietary versus public SM. By establishing their own SMP via third-party service providers such as Fb and Tw, governments face alienating some users. User contributions to an official page might marginalize some groups who are wary of releasing sensitive data (Roman & Miller, 2013). Sharing content with the government and via a third-party SM provider brings issues of trust and reputation of third-party providers in government (Carter et al., 2012). However, without the aid of existing and established SM services, governments are likely unable to resolve the conflicting goals of achieving ef-

iciency and quality citizen services (Kohlburn et al., 2013); building their own SM platform is not feasible.

### 5.6. SMP as Readiness for Exception Events

While the findings thus far do not cast a favorable light on the role of SM in county EGOV - low adoption, misleading presence, operational aimlessness, and digital divide issues - there may yet be a place for SM in government. Haahr (2013) discussed the *form of practice* contradiction of government SM, namely, it is either a *soft public relations* or a *core service provision* channel (Charalabidis & Loukis, 2012). SM in government appeared to increase access for citizens without providing substantive discourse (Kohlburn et al., 2013). In the limited observation of this study, because SM Usage was not operationalized or explicitly coded, there did not appear to be meaningful dialogue or substantive government-provided content; many government SM sites even restrict user contribution thus using SM as a one-way e-billboard versus a forum for user-generated content and co-created value. SMP appears to be an ornamental add on to a webpage versus a deliberate strategic tool.

These findings are in contrast to the idea that SM can be successfully used during disasters (Charalabidis & Loukis, 2012; Goolsby, 2010) and Tw is an effective tool for disseminating press releases (Waters & Williams, 2010). Citizen engagement and debate exists even if not occurring on official government SM pages. This is where social analytic tools like those discussed in other research come into play, to engage citizens where they are online (Charalabidis & Loukis, 2012; Wandhöfer et al., 2012) versus driving them to an official government channel. For the seemingly aimless forays into SM by county governments, they do not appear to have invested any real resources into SM and remain at an early, experimental stage. These efforts, while not having any impact now, do poise governments to be ready during times of exception, crisis or disaster, in

which all public resources and communication channels are utilized to disseminate information to citizens. Arguably it will be these counties that are now experimenting with SM will be better prepared to utilize SM during exception events than those that have not yet attempted to establish any degree of SMP.

## 6. RESEARCH LIMITATIONS AND FUTURE DIRECTIONS

This inquiry into the role of SM in county EGOV as related to the influence of citizen socio-demographic factors to the presence of SM, while worthwhile, is imperfect. The presence of SM is a rudimentary step toward a more important goal of determining the extent of SM usage and SM success. These were not determined by this study and are an area for future investigation. There are many available SM platforms and this study only looked at the two popular ones of Facebook and Twitter. CodeRed (<http://www.ecnetwork.com/codered/>) was frequently present on websites but this and potentially others were not accounted for in this study. The operationalization and scoring of SMP may be improved and errors may have occurred in the process. Although coders were trained and some overlap of scoring did occur, there were not measures of inter-rater reliability or other checks to ensure precision of scoring. Future SMP scoring may need to rely on automated tools such as NVivo as used in related research (Witman, 2014; Kohlburn et al., 2013). SMP was operationalized into six categories but condensed to just three for the purposes of analyses. More observations (a wider sample of more counties and individual departments/agencies) or a different context in which SM is less scarce is needed to verify the SMP construct.

## 7. CONCLUSION

Prompted by both EGOV's and SM's untapped transformative power, this study investigated SM presence in often-overlooked county gov-

ernments as related to the influence of citizen socio-economic demographic factors. The Social Media Presence construct was defined and operationalized to determine the extent to which county governments purport to use social media services and included when the presence is non-functional and therefore misleading. County governments exhibited a low adoption rate, reduced further by those that were misleading in the representation of social media presence, effectively near 11%. Citizen demographic factors found to be associated with the presence of a social media service were population density, income, and - to a lesser degree - education level. These three may potentially increase the digital divide and violate the universal service goal of e-government.

The findings of this study inform the role of social media in county government as being operationally aimless (lacking any statement of purpose) and seemingly the classic IT pit-fall of pursuing a technology for the sake of technology and not for an organizational goal. Social media may not be the vehicle to drive e-government development from its sluggish development and increase its transformative potential; however, it does still hold a place for governments. The initial and experimental forays into social media by county governments at the very least improve the readiness of the government organizations for when all available communication channels are needed in times of exception, crises, and disasters.

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## APPENDIX

Table 3. Multinomial regression analysis parameter estimates

| SMPLite <sup>a</sup> |            | B       | Std. Error | Wald   | df | Sig. | Exp(B) |
|----------------------|------------|---------|------------|--------|----|------|--------|
| 1                    | Intercept  | -11.918 | 2.731      | 19.049 | 1  | .000 |        |
|                      | POPULATION | .724    | .267       | 7.359  | 1  | .007 | 2.063  |
|                      | GROWTH     | -.009   | .017       | .288   | 1  | .592 | .991   |
|                      | DENSITY    | -.058   | .248       | .054   | 1  | .817 | .944   |
|                      | EDUCATION  | -.087   | .075       | 1.325  | 1  | .250 | .917   |
|                      | INCOME     | .000    | .000       | 3.565  | 1  | .059 | 1.000  |
|                      | AGE        | -.006   | .064       | .008   | 1  | .929 | .994   |
| 3                    | Intercept  | -5.279  | 1.573      | 11.270 | 1  | .001 |        |
|                      | POPULATION | .010    | .153       | .004   | 1  | .947 | 1.010  |
|                      | GROWTH     | .006    | .009       | .428   | 1  | .513 | 1.006  |
|                      | DENSITY    | .435    | .145       | 9.067  | 1  | .003 | 1.545  |
|                      | EDUCATION  | .048    | .027       | 3.097  | 1  | .078 | 1.050  |
|                      | INCOME     | .000    | .000       | 5.155  | 1  | .023 | 1.000  |
|                      | AGE        | .005    | .035       | .023   | 1  | .879 | 1.005  |