Association for Information Systems
AIS Electronic Library (AISeL)

ICIS 2010 Proceedings

International Conference on Information Systems (ICIS)

2010

EFORMING THE ELECTORATE: PATTERNS OF TECHNOLOGY USE

Nora I. Misiolek
Marist College School of Computer Science & Mathematics, Nora.Misiolek@Marist.edu

Edward Wozencroft
Marist College School of Computer Science & Mathematics, Edward.Wozencroft1@Marist.edu

eFORMING THE ELECTORATE: PATTERNS OF TECHNOLOGY USE

Research-in-Progress

Nora I. Misiolek
Marist College
School of Computer Science & Mathematics
3399 North Road
Poughkeepsie, NY 12601
Nora.Misiolek@Marist.edu

Edward Wozencroft
Marist College
School of Computer Science & Mathematics
3399 North Road
Poughkeepsie, NY 12601
Edward.Wozencroft1@Marist.edu

Abstract

This paper discusses research-in-progress on a longitudinal study of technology usage by incumbent members of the U.S. Congress on their official Congressional homepages to "routinely" communicate with the public and with their constituencies as well as technology usage on campaign homepages for the purpose of political campaigning. By examining the types of information technologies embedded on and linked to from both types of homepages, we propose to track technology usage over time in order to study the diffusion and adoption of information technologies within the political arena. Drawing on diffusion of innovation and institutional isomorphism as our theoretical framework, we propose that examining patterns of diffusion of three categories of information technology – Web 1.0, Web 2.0, and Social Networking technologies – will provide us with insights into the changing nature of political communication strategies enabled by information technology, as well as insights into factors underlying institutional technology diffusion.

Keywords: Diffusion of innovation, information technology, politics, Web 2.0, social technology.

Introduction

In the wake of the successful use of new technologies by the Obama presidential campaign in 2008, the news media have made much of the use of new technologies both to disseminate information to the electorate and to mobilize supporters of candidates for office. A recent report on National Public Radio, for example, stated that members of the U.S. House of Representatives and the Senate actively disseminate content via YouTube ("Republican Politicians," 2009). In keeping with technological trends, the Congressional Research Service tracks the volume of email as well as postal mail received by members of Congress (Shogan, 2010).

In short, projection of an image as a "technology savvy" and/or "constituent-friendly" or "connected" elected official had become somewhat of a media focal point in the time since the Obama electoral campaign. The popular press would suggest that "everyone" is using technology to inform their electorates as well as to create social networking and community-building opportunities via the use of social networking technologies such as Facebook and Twitter. However little research has focused on dimensions of technology usage such as how members of Congress are using these technologies routinely via their Congressional homepages, how technology usage on official homepages might differ from technology usage for the purpose of political campaigning, or how usage might evolve over time.

We coined the term eForming to capture two dimensions of technology usage. Some technologies embedded on or linked to from homepages serve primarily an informational purpose. Technologies such as eNewsletters, YouTube, Flickr, and RSS feeds are used to primarily inform constituencies of the activities in which their elected officials are engaged. They reinforce "traditional" one-to-many, unidirectional communication from elected officials to the public and to their constituents. Other technologies such as Facebook and Twitter serve a different purpose. They are primarily used to create social networking opportunities for elected officials and constituents as well as a sense of virtual community. As such, the technologies represented on official Congressional represent a new method of communicating that is projected to change the way in which elected officials interact with their constituencies as well as institutional norms associated with interaction between elected officials and constituents (Shogan, 2010).

This paper discusses the proposed research and reports selected preliminary results of Stage 1 of a longitudinal study that examines use of new technologies on Congressional homepages and on campaign websites. This is the starting point for a longitudinal examination of technology usage for the purpose of "routinely" communicating with constituents via incumbents' official Congressional homepages as well as technology usage for the purpose of political campaigning. Given that the last comprehensive analysis of the use of websites in election campaigns was Foot and Schneider's (2006) analysis of web campaigning during the 2000-2004 elections, there has not been a subsequent analysis that encompasses emergent technologies such as social networking sites or changes in technology usage over time. We propose to extend this line of analysis by tracking technology usage over time on both Congressional and campaign websites in order to study the diffusion and adoption of emerging information technologies, and mechanisms underlying technology diffusion (Bazerman, 2001).

Theoretical Framework

In our view, Congressional websites and campaign websites represent related sociotechnical systems that serve to paradoxically mutually reinforce and influence one another as technologies and their normative usage evolve over time (Foot & Schneider, 2006). The process of eForming the electorate involves the interplay of technologies, institutions, and organizations, as well as the actions of individuals interacting within them. As Raisinghani and Weiss (2010) point out, the Internet – and by extension new information technologies and methods of communicating and organizing – are "leveraged within the framework of existing institutions" providing "a new and enhanced platform for organization, communication, and collaboration in campaigns and elections" (p. 3). However, we would argue that the influence of these new technologies extends beyond campaigning and elections to influence to the means by which elected officials utilize technologies to "routinely" interact with their constituencies and with the public via their official Congressional websites between election cycles, and that reciprocal influence may exist between these two domains. As Howard (2006) notes, Congress is an institution, as are political parties. Technology adoption and usage reflect institutional innovation that may lead to change in both the structure and function of institutions. As such, technology adoption and usage are best viewed in terms of evolution rather than in terms of revolution, as the popular press would prefer the public to believe. Rogers' (2003) diffusion of innovation

perspective encompasses both individual and institutional/organizational dimensions of technology adoption and diffusion. As such, it serves as our theoretical framework for this study.

Diffusion of Innovation

The use of technology to eForm the electorate represents an innovation in the way in which elected officials as well as candidates for office communicate with the public and with their electorates. Early studies of the adoption of communication technologies by political candidates indicated that candidates preferred to adopt technologies that allowed them to directly control the messages that they were disseminating as well as the image that they projected to the public(D'Alessio, 2000). However, the decision to adopt a particular technology by members of any social system is dependent on five factors (Rogers, 2003):

(a) Relative advantage: Relative advantage refers to the degree to which an innovation represents a better means of doing something than that which preceded it. There is no single source of relative advantage, it can derive from any number of sources including social, economic, communicative, and social status relative advantage.

(b) Compatibility: Compatibility refers to the extent to which an innovation is perceived as being consistent with existing norms, values, and practices. Among the factors identified by Rogers (2003) as influencing perceptions of compatibility are technology clusters, or elements of technology that are perceived as being interrelated and therefore also perceived as similar.

(c) Complexity: Complexity refers to the extent to which an innovation is perceived to be relatively simple or difficult to use and to understand. Evidence suggests that of the five factors, complexity is negatively related to innovation adoption.

(d) Trialability: Trialability refers to the ability of a potential adopter to experiment with an innovation on some limited basis. This factor is more important to early adopters than to late adopters of an innovation since it serves to reduce the uncertainty associated with adoption. It should be noted that trialability can also be vicarious and/or psychological in that later adopters can observe the use of technology by earlier adopters and the consequences of adoption.

(e) Observability: Observability refers to the extent to which the consequences of an innovation are easily observed and described to others. As such, observability facilitates adoption.

The social systems and networks within which individuals interact are also factors that influence innovation diffusion and acceptance. Rogers (2003) defines a social systems as "a set of interrelated units that are engaged in joint problem solving to accomplish a common goal… members or units… may be individuals, informal groups, organizations, and/or subsystems (p. 24). As such, the Senate and House are social systems as are the political parties with which members of Congress are affiliated, and subgroups within those parties (e.g., The Blue Dog Coalition among Democrats).

A second related factor within social systems that influences the transfer of ideas as well as the decision to adopt an innovation is the degree to which individuals are heterophilious or homophilious. Homophily is the extent to which individuals are similar with respect to certain attributes such as beliefs, education, social status, etc. Heterophily, which is the degree to which individuals are dissimilar, exerts a negative influence on innovation diffusion. As such, members of the Senate and the House may be homophilious on a number of dimensions that may influence adoption of technologies such as political party, coalition, age, gender, incumbency, and region of the country.

In analyzing factors related to adoption and diffusion of new technologies, the diffusion of innovation perspective provides a lens through which to view the attributes of the technology itself, as well as the characteristics of members of the Senate and the House that may influence adoption. For example, social networking technologies may be adopted differentially based on characteristics of members of Congress such as political party affiliation. However, there may be aspect of the technologies themselves that can be inferred to either lead to or impede adoption such as the need to author – or to dedicate a staff member's time and resources to authoring – original content for Twitter or for Facebook pages which may adversely influence the perceived relative advantage of the technology.

Research Questions

Five broad research questions were formulated based on the empirical and conceptual literature on the political use of technologies, and assertions made in the popular press:

1. What is the nature of technology usage by incumbent members of the Senate and members of the House of Representatives on their official Congressional and campaign websites?
2. What is the nature of technology usage by members of the Democratic and Republican political parties within the Senate and the House of Representatives on their official Congressional and campaign websites?
3. What role do the five factors identified by Rogers (2003) – relative advantage, compatibility, complexity, trialability, and observability -- play in the innovation adoption decision?
4. What is the nature of the relationship between potential sources of homophily such as age, duration of incumbency, and gender and technology usage?
5. How does technology usage change over time?

Method

Unit of Analysis

The unit of analysis in this stage of the study is the official Congressional homepage of the elected official; official campaign website homepages will be examined in subsequent stages. The homepage was selected as the unit of analysis because it serves as the "front door" to the website (Ha & James, 1998). Visitors to a website make a decision on whether or not to continue to browse the site based on their impression of the homepage. As Ha and James (1998) point out, use of the homepage as the unit of analysis also provides consistency across the sample of websites because all of the units of analysis are a single page. Because websites vary in complexity, this also reduces the possibility of bias based on different website size. Although content such as hyperlinks to new social networking and other technologies like YouTube pages or to Facebook may be embedded on pages other than the homepage, it cannot be assumed that visitors will click through to those pages. Despite evidence that visitors who seek out political information are more actively engaged in politics and more motivated to do so than others (Comstock & Sharrer, 2005), we still consider the homepage to be the relevant unit of analysis because even motivated and more-engaged visitors may not click through to pages on which such links are embedded.

Members of Congress may maintain separate websites such as YouTube, Twitter, blogs, and Facebook pages that are not linked to from their homepages (Bimber & Davis, 2003, Foot & Schneider, 2006). The existence of these separate sites has been noted in the coding since this supplemental data may yield additional insights into innovation diffusion dynamics as the project proceeds. This data is not included in the analysis reported here.

Congressional Homepage Coding

Because Congressional as well as campaign websites are dynamic, coding of Congressional homepages will take place at four-month intervals for the duration of the study in order to capture changes over time. Official Congressional homepages of members of the House of Representatives and the Senate were content analyzed inductively in November 2009 in order to generate a content analytic schema for future coding of homepages. Based on this initial coding, 16 technologies were identified as frequently embedded on or linked from Congressional homepages. Subsequent content analysis of the websites used this set of core technologies, coding for presence on homepages. The second round of coding for was conducted in late March and early April 2010 in order to capture any changes to the homepages. New or novel technologies that did not appear in the initial coding were noted in subsequent coding, as were any changes to the homepages in the intervening period. For example, links to Twitter and to MySpace were removed from the homepages of several members of the House of Representatives while links to Facebook and Twitter were added on others. A decision was made during the second round of coding to distinguish between embedded video content from CSPAN, YouTube, or other sources and linked YouTube on homepages based on the degree of control that the visitor has to browse content versus view content selected by site designers to be embedded. Survey/poll, a category that was not included in the first round of coding was added based on the number of notations as to its appearance on homepages. It was decided to retain MySpace as a coding category despite a decline in the number of MySpace links in the intervening time period, and to include LinkedIn as an emerging social networking technology that may gain usage in future recoding of official

homepages and campaign homepages. While most members of Congress have contact links, it was decided that only those that explicitly referred to email contact would be included in the coding scheme. This is because the mixed contact links were thought not to represent explicit technology usage. The reframing of the coding scheme increased the total number of technologies coded to 19 (Table 1).

Five seats in the House of Representatives were vacant at the time of the second coding. The websites for those representatives had been taken down. The data pertaining to those members was not considered in the analysis. Duplicate, or second, websites representing an office held in the House were also not considered. For example, Representative Nancy Pelosi has an official House website and a website for House Majority Leader. Only data pertaining to her official House website was included in the analysis. Additional data were collected for each member of the House and Senate and for the states and Congressional districts represented from the 2010 *Almanac of American Politics* (Barone, 2009) which contains demographic information on elected officials, and states and Congressional districts based on Census data.

Table 1
Technology Usage Index

Category	Definition & Point Value	Representative Technologies
Web 1.0	Df: Basic technologies that facilitate communication. Point value: 3	Email contact eNewsletter Survey/poll Alternative language website Bandwidth alternatives Ability to change font size
Web 2.0	Df: Technologies that facilitate information sharing. Point value: 7	RSS YouTube • Embedded • Linked Blogs Bookmark and share Podcasts Flickr/Picassa Teletownhall
Social Networking	Df: Technologies that facilitate computer-mediated social interaction and networking. Point value: 9	Twitter Facebook MySpace LinkedIn

Technology Usage Index

In order to quantify technology usage for further analysis, a Technology Usage Index was created (Table 1). Technologies were categorized as Web 1.0, Web 2.0, or Social Networking technologies in order to reflect the technology facilitated communication, information sharing, or social interaction/networking (O'Reilly, 2005). The rationale for creating categories of technologies based on these characteristics builds on Roger's (2003) discussion of technology clusters and the tendency for individuals to perceive technologies similarly based on certain characteristics. This allowed a total index score to be calculated for overall technology usage for each member of the House and Senate. It also allowed intermediate index scores to be calculated reflecting use of Web 1.0, Web 2.0, and Social Networking technologies. Based on the point values assigned to each of the three categories of technologies, index scores ranged from zero to 110 for overall technology usage. Web 1.0 scores ranged from zero to 18. Web 2.0 scores ranged from zero to 56. Social networking scores ranged from zero to 28. Note that the point values were assigned to reflect the type of interaction facilitated, with the least complex category in terms of interaction facilitated (Web 1.0) receiving a lower value than the most facilitative of social interaction (Social Networking), and technologies viewed to be of intermediate interactivity receiving an intermediate point value (Web 2.0).

The Technology Usage Index is flexible in that technologies within each category can be added or removed based on patterns of usage and category of technology. Since campaign websites differ from Congressional websites in terms of objective and content, the Technology Usage Index will be modified to account for those differences based

on Foot & Schneider's (2006) analysis of campaign website content in the 2000-2004 elections. In its present form, it is specifically meant to capture technology usage on Congressional homepages.

Congressional Campaign Homepage Coding

In December 2009 and January 2010, the URLs of the campaign websites of incumbent members of Congress up for reelection in November 2010 were entered into the study database and examined to determine whether these had yet been modified in anticipation of the upcoming campaign. Preliminary lists of challengers to Congressional incumbents were obtained by searching the Federal Election Commission (www.fec.gov) databases. Google searches were conducted to determine whether the challengers had launched a campaign website. If the challenger had launched a website, the URL was entered into the database.

Congressional filing deadlines range from January to July, 2010, with Congressional primary dates ranging from March through September 2010 (Barone, 2009). In light of the variability in filing deadlines and primary dates, we decided that the coding of incumbent homepages will occur sequentially based on filing these dates and deadlines. The rationale in doing so, based on our earlier examination of homepages, is that campaign website design and homepage content should evidence more stability as the slate of those seeking reelection and their challengers becomes finalized. The coding of campaign homepages was begun in August 2010 and will continue throughout the November 2010. The August coding will establish a baseline similar to that established in November and December 2009 for Congressional homepages. Subsequent coding will capture any changes that occur.

Data on challenger homepages is being collected in order to capture innovation diffusion dynamics that may exist within Congressional campaigns as incumbents and challengers vie for election. While the main focus of this study is on the Congressional and campaign homepages of incumbents, we believe that the collection of these additional data at will add an additional rich dimension to our longitudinal examination of dynamics over time.

Supplementary Interview Data

In order to gain additional insights into technology usage among incumbent members of Congress, a semi-structured interview protocol is under development. Interviews will be conducted with incumbent members of Congress, and when possible, web developers and/or staff members responsible for design and maintenance decisions to prove the influence of the five factors affecting adoption decisions discussed within the theoretical framework. These interviews are scheduled to be conducted in Spring 2011.

SUMMARY OF PRELIMINARY RESULTS

We report preliminary results on technology usage within the Senate and the House of Representatives based on our analysis of Congressional homepages. To date, the analysis has focused on aggregate technology usage within the Senate and the House of Representatives, usage by political party affiliation within both the Senate and the House , the role of the five factors suggested by Rogers (2003), and potential sources of homophily such as age, gender, and length of incumbency. Nonparametric statistical tests were run to determine whether observed patterns were statistically significant where appropriate. Similarly, correlation coefficients were calculated where appropriate.

Technology Usage by Members of the Senate and House of Representatives

Patterns of aggregate technology usage indicate that members of the Senate and the House of Representatives differ in the use of technology on their official homepages ($z = -2.634$, $p < .004$). In general, members of the House of Representatives are proportionately higher in the use of technology than members of the Senate.

Examination of patterns of usage of the categories of technologies reveals that the usage of Web 1.0 technologies is comparable in the Senate and in the House ($z = -1.81$, $p < .035$). However, members of the House (95%) are more likely to have an eNewsletter sign-up link than members of the Senate (77%). Email contact links are more prevalent on Senate homepages (63% vs. 42%). Surveys/polls appear infrequently on both Senate and House homepages. Neither the homepages of members of the Senate nor those of members of the House contained many features that allow the user to change the appearance of the homepage. The ability to change text size, to accommodate different bandwidths, and to link to an alternative language site were infrequent.

Usage of Web 2.0 technologies is significantly more prevalent on homepages of members of House than members of the Senate ($z = -2.634$, $p < .0003$). The most commonly embedded or linked Web 2.0 technologies for both are RSS feed links, embedded video, and YouTube links. In general, Web 2.0 technologies such as blogs, podcasts, Flickr/Picassa links, book and share links, and Teletownhalls were infrequent.

Table 2
Technology Usage in the Senate

Web 1.0 Technologies		
Technology	**Frequency**	**Percentage**
eNewsletter	77	.770
Email contact	63	.630
Survey/poll	1	.010
Text size	32	.320
Alternative language	17	.170
Bandwidth	20	.200
Web 2.0 Technologies		
Technology	**Frequency**	**Percentage**
RSS Link	52	.520
Embedded Video	37	.370
YouTube Link	53	.530
Bookmark & Share	5	.050
Blog	11	.110
Flickr/Picassa	9	.090
Teletownhall	5	.050
Podcast	9	.090
Social Networking Technologies		
Technology	**Frequency**	**Percentage**
Facebook	30	.300
Twitter	32	.320
MySpace	1	.010
LinkedIn	1	.010

Table 3
Technology Usage in the House of Representatives

Web 1.0 Technologies		
Technology	**Frequency**	**Percentage**
eNewsletter	405	.940
Email contact	170	.415
Survey/poll	121	.281
Text size	63	.146
Alternative language	28	.065
Bandwidth	16	.037
Web 2.0 Technologies		
Technology	**Frequency**	**Percentage**
RSS Link	259	.601
Embedded Video	254	.589
YouTube Link	230	.534
Bookmark & Share	83	.192
Blog	81	.187
Flickr/Picassa	56	.130
Teletownhall	41	.095
Podcast	20	.046
Social Networking Technologies		
Technology	**Frequency**	**Percentage**
Facebook	215	.499
Twitter	126	.292
MySpace	7	.016
LinkedIn	5	.011

Use of Social Networking technologies is not widespread on either Senate or House homepages, although Facebook links were more common on House members' homepages ($z = -1.756$, $p < .039$). Approximately 30% of Senate homepages contained links to Facebook and to Twitter, usually appearing jointly homepages. Approximately 50% of House members' homepages contained a link to Facebook, while only 30% contained a link to Twitter. Links to Facebook were usually coincident with links to Twitter on House members' homepages. MySpace and LinkedIn links were extremely rare.

When patterns of association between use of Web 1.0, Web 2.0 and Social Networking technologies were examined, in the Senate, moderate positive associations were found between Web 1.0 and Web 2.0 technology usage ($r = .35$), Web 1.0 and Social networking technology usage ($r = .247$), and Web 2.0 and Social Networking technology usage ($r = .485$). In the House of Representatives, small positive associations were found between Web 1.0 and Web 2.0 technology usage ($r = .228$) and between Web 1.0 and Social Networking technology usage ($r = .189$). A sizable positive correlation was found between Web 2.0 and Social Networking technologies among House members ($r = .513$).

Technology Usage by Political Party in the Senate and House of Representatives

To date, our analysis has examined two aspects of technology usage that reflect usage of technology between and within political parties.

Technology usage between political parties

When political party affiliation was taken into account, Senate Democrats and Republicans were found to be similar in technology usage across all three categories of technology; no statistically significant differences were found (Table 4). Web 1.0 technologies represent the most frequently appearing technology, though those supporting traditional unidirectional communication between the incumbent and his or her electorate (i.e., eNewsletters and email contact) were most common.Web 2.0 technologies were the second most common. Links to Social Networking technologies were rare on Senate Democrat (25%) and Senate Republican (34%) homepages. Similar patterns and no statistically significant differences were found between House Democrats and Republicans.

Table 4
Technology Usage by Democrats in the Senate and the House of Representatives

Web 1.0 Technologies				
	Senate		**House**	
Technology	**Frequency**	**%**	**Frequency**	**%**
eNewsletter	47	.855	293	.937
Email contact	36	.655	106	.416
Survey/poll	0	.000	72	.284
Text size	21	.382	33	.129
Alternative language	11	.200	17	.067
Bandwidth	4	.073	12	.047
Web 2.0 Technologies				
	Senate		**House**	
Technology	**Frequency**	**%**	**Frequency**	**%**
RSS Link	26	.473	153	.600
Embedded Video	21	.382	137	.537
YouTube Link	29	.527	151	.592
Bookmark & Share	4	.073	51	.200
Blog	6	.109	51	.200
Flickr/Picassa	8	.146	34	.131
Teletownhall	2	.036	27	.106
Podcast	4	.073	13	.051
Social Networking Technologies				
	Senate		**House**	
Technology	**Frequency**	**%**	**Frequency**	**%**
Facebook	14	.255	126	.494
Twitter	16	.291	73	.286
MySpace	0	.000	3	.012
LinkedIn	1	.018	3	.012

Table 5
Technology Usage by Republicans in the Senate and the House of Representatives

Web 1.0 Technologies				
	Senate		**House**	
Technology	**Frequency**	**%**	**Frequency**	**%**
eNewsletter	29	.707	165	.937
Email contact	25	.610	72	.409
Survey/poll	1	.024	48	.068
Text size	10	.244	29	.165
Alternative language	6	.146	12	.068
Bandwidth	16	.390	4	.022
Web 2.0 Technologies				
	Senate		**House**	
Technology	**Frequency**	**%**	**Frequency**	**%**
RSS Link	25	.610	105	.597
Embedded Video	16	.390	92	.523
YouTube Link	23	.560	103	585
Bookmark & Share	1	.024	32	.182
Blog	5	.122	27	.153
Flickr/Picassa	1	.024	22	.125
Teletownhall	3	.073	14	.079
Podcast	5	.024	7	.040
Social Networking Technologies				
	Senate		**House**	
Technology	**Frequency**	**%**	**Frequency**	**%**
Facebook	14	.341	87	.494
Twitter	14	.341	52	.295
MySpace	1	.024	4	.023
LinkedIn	0	.000	2	.011

Technology usage within political parties

Senate and House Democrats were found to differ in their usage of technologies (Table 5). Significant differences were found in overall technology usage as assessed by Technology Usage indices ($z = -1.467$, $p < .07$). Significant differences were also found for Web 1.0 technology usage ($z = -1.87$, $p < .03$), Web 2.0 technology usage ($z = -2.63$, $p < .004$), and Social Networking technology usage ($z = -2.94$, $p < .001$). In general, Democrats in the House of Representatives were proportionately higher in technology usage than their counterparts in the Senate.

In contrast, House and Senate Republicans were not significantly different in technology usage (Table 5). The exception was for usage of Web 2.0 technologies, in which case, a significant difference was found ($z = -1.065$, $p < .05$). No significant differences were found in overall technology usage as assessed by Technology Usage indices ($z = -1.04$, $p < .148$), Web 1.0 technology usage ($z = -0.012$, $p < .180$), or Social Networking technology usage ($z = -1.063$, $p < .144$).

Incumbent Characteristics and Technology Usage

Three incumbent characteristics were examined to determine whether select homophilic characteristics are associated with technology usage.

Age

In the Senate, small negative correlations were found between age and technology usage. No relationship was found between age and technology usage in the House of Representatives, or between House Democrats and Republicans. Although differences failed to achieve statistical significance the patterns are worth noting. A small negative correlation was found between age and technology usage index score ($r = -.264$). Small negative correlations were also found between age and Web 1.0 usage ($r = -.111$), age and Web 2.0 usage ($r = -.235$) and age and Social Networking technology usage ($r = -.221$).

Among Senate Democrats, small negative correlations were found between age and technology usage, but not among Senate Republicans. Overall, a small a negative correlation was found between technology usage index score and age ($r = -.12$), Web 1.0 usage and age ($r = -.12$), and Web 2.0 usage and age ($r = -.17$) among Senate Democrats. Among Senate Republicans, a small negative correlation was found between age and Web 1.0 technology usage ($r = -.156$). However, small positive correlations were found between age and technology usage index score (r -=.155), age and Web 2.0 usage ($r = .19$), and age and Social Networking technology usage ($r = .173$).

Gender

No differences were found between male and female members of the Senate in technology usage. Male and females members of the House of Representatives were also similar in technology usage with one exception. Female House members are significantly higher than males in Social Networking Technology usage ($H = 42.72$, $p < .000$).

Length of incumbency

In the Senate, small negative correlations were found between length of incumbency and technology usage. Again, differences failed to reach statistical significance but, for our purposes, the patterns are worth noting. A small negative correlation was found between length of incumbency and technology usage index score ($r = -.175$). Small negative correlations were also found between length of incumbency and Web 1.0 usage ($r = -.05$), length of incumbency and Web 2.0 usage ($r = -.179$) and length of incumbency and Social Networking technology usage ($r = -.13$).

Among both Senate Democrats and Republicans, small negative correlations were found between length of incumbency and technology usage. Among Senate Democrats, small negative correlations were found between length of incumbency and technology usage index ($r = -.24$), length of incumbency and Web 1.0 usage ($r = -.106$), length of incumbency and Web 2.0 usage ($r = -.195$), and length of incumbency and Social Networking Technology Usage ($r = -.239$). Among Senate Republicans, small negative correlations were found length of incumbency and technology usage index ($r = -.129$), length of incumbency and Web 2.0 usage ($r = -.12$), and length of incumbency and Social Networking Technology Usage ($r = -.119$); the correlation between length of incumbency and Web 1.0 technology usage was neglible..

No relationship was found between incumbency and technology usage overall in the House of Representatives. However, when the data were examined by political party affiliation, small positive relationship was found between incumbency and Web 2.0 technology usage among Democrats ($r = .19$). Among Republicans, small negative

correlations were found between incumbency and technology usage (r = -.17) and between incumbency and use of Web 2.0 technologies (r = -.24).

Concluding Remarks

Although data collection and the analysis to date have focused on Congressional homepages, we are encouraged by the preliminary results. Evidence suggests that members of the Senate and the House of Representatives differ in their use of technologies, and that these differences may be attributable to the nature of the elected office held than to political party affiliation or to homophily based on personal characteristics. It is possible that shorter election cycles within the House of Representatives are responsible for a higher level of technology adoption overall as members terms of office are shorter, and these elected officials may feel the need to appear more connected to their constituents; these possibilities will be explored in semi-structured interviews to be conducted with members of Congress as research proceeds.

Patterns of technology adoption suggest that adoption decisions may be based on the five factors identified by Rogers – relative advantage, compatibility, complexity, trailability, and observability. For example, eNewsletters are a technology that provides incumbents with a relative advantage compared with older means of communicating such as printed newsletters sent via the postal service. The use of email to send out eNewsletters represents a monetary savings over the cost reproducing and mailing conventional newsletters. eNewsletters are also compatible with existing means of communicating with constituents since they are electronically-disseminated versions of paper-based means of communication. The technology is also not terribly complex, and highly observable and trialable. Together, these factors may account for higher levels of adoption than other technologies such as social networking technologies.

As has been outlined in this paper, future research within this project will utilize a variety of methodologies in order to generate additional insights into these patterns and additional data generated in future stages of the project.

References

Barone, M. *The Almanac of American Politics 2010.* The National Journal Group, Washington, DC, 2009.

Bazerman, C. "Politically Wired: The Changing Places of Political Participation in the Age of the Internet," in *Information Technology and Organizational Transformation*, Yates, J. & Van Maanen, J. (Eds), Thousand Oaks, CA, Sage , 2001, pp. 137-154.

Bimber, B. *Information and American Democracy*, Cambridge University Press, New York, 2003.

Bimber, B., & Davis, R. *CampaigningOnline: The Internet and U.S. Elections*, Oxford University Press, New York, 2003.

Comstock, G., & Sharrer, E. *The Psychology of Media and Politics.* Elsevier Academic Press, San Diego, 2005.

"Congress Members Fight for Right to Twitter," National Public Radio, July 10, 2008. Available at: http://www.npr.org/templates/story/story.php?storyId=92398555.

D'Alessio, D. "Adoption of the Internet by American Political Candidates, 1996-1998," (44: 4), 2000, *Journal of Broadcasting and Electronic Media*, pp. 556-568.

Foot, K.A., & Schneider, S.M. *Web Campaigning*, The MIT Press, Cambridge, MA, 2006.

Ha, L., & James, E."Interactivity reexamined: A baseline analysis of early business Web sites," (42:4), 1998, *Journal of Broadcasting & Electronic Media*, pp. 456-474. Retrieved from Communication & Mass Media Complete database.

Howard, P.M. *New Media Campaigns and the Managed Citizen.* Cambridge University Press, New York, 2006.

O'Reilly, T. "What is Web 2.0: Design Patterns and Business Models for the Next Generation of Software," 2005,. Available at: http://oreilly.com/web2/archive/what-is-web-20.html. Accessed on April 26, 2010.

Raisinghaini, M.S., & Weiss, R. "The Impact of the Internet on Politics: The 'Net Effect on Political Campaigns and Elections," (13:3), 2010, *Journal of Global Information Technology Management*, pp. 1-4.

"Republican Politicians Make a Social Media Push," National Public Radio, December 27, 2009. Available at: http://www.npr.org/templates/story/story.php?storyId=121891988

Rogers, E.M. *Diffusion of Innovations (6th ed)*, New York, The Free Press, 2003.

Shogan, C.J. "Blackberries, Tweets, and YouTube: Technology and the Future of Communicating with Congress," 2010, *Politics & Society*, pp. 231-233.