Usability of Government Websites in Uganda

Edgar Napoleon Asiimwe¹ and Nena Lim²
¹Swedish Business School, Örebro University, Sweden
²Curtin University of Technology, Perth, Australia

Abstract: Government websites offer great benefits to citizens and governments. Such benefits, however, cannot be realized if websites are unusable. This study investigates usability of government websites in Uganda. Using the feature investigation method, the study evaluated four Ugandan government websites according to three perspectives. Results show that websites are partially usable in the design layout and navigation perspectives but are rather weak in stating legal policies. Evaluation results provide the Ugandan government with a clear picture of what needs to be improved according to international website design standards. Moreover, the parsimonious evaluation framework proposed in the research is useful for any country that wants to do a quick and easy evaluation of their government websites.

Keywords: e-government, web usability, Uganda, feature inspection method

1. Background

The increasing use of information and communication technology (ICT) in particular the Internet has become prominent and has the potential to change fundamentally how organizations work (La Porte et al., 2001). Internet provides an opportunity for governments to offer services to their citizens via websites. Government websites provide a platform for efficient communication and access to public information. They are a useful tool to transparency and democracy because they enable citizens to easily interact with their governments. E-government is defined as “the use of information technology (IT) by public sector organizations” (Heeks, 2006 p.4) and it involves provision of electronic services such as eProcurement, ePetitioning and eVoting.

Implementation of government websites can be classified into four phases, namely: (1) website creation, (2) initial two-way interaction, (3) online transactions and (4) comprehensive government portals (Kaaya, 2004). The first phase involves development of government websites to provide information to citizens. The second phase focuses on building a platform for interaction between citizens and the government. Tools such as electronic submission forms and discussion forums are created at this phase. The third phase aims at creating web tools for facilitating transactions of government services, such as electronic procurement. The last phase involves integration of government systems to share resources. Usability issues of government websites are particularly relevant to phases one and two of the implementation of government websites.

According to International Organization for Standards (ISO), usability is the extent to which a product, for example software or a website, can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use (ISO, 1998). Website usability or web usability is vital to both private and public organizations because unusable website reduce the effectiveness of communication between users and the organizations. Web usability generally means that websites are clear, simple, consistent and easy for users to use (Cappel & Huang, 2007).

Despite the importance of government websites in government-citizen relationship, many government websites are seldom used, especially not by people with disabilities (Ivory & Chevalier, 2002). For example, Abanumy et al. (2005) show that 98 percent of eGovernment websites worldwide are inaccessible by impaired users. Similarly, Baguma et al. (2007) show that most websites today are three times more used by people without disabilities than those with disabilities. Because accessibility is an element of web usability (Henry, 2002), accessibility problem of government websites therefore reduce their usability and this in turn hampers the role government websites would play in delivering services to citizens.

To date, only limited studies have examined the issue of e-government in developing countries such as Africa (Abdulmohsen et al.; 2005; Heeks, 2002; Schuppan, 2009). Heeks (2002) is one of the exceptions and discussed the development of e-government in Africa in relation to the specific
economical and administrative characteristics of the continent. This study investigates usability aspects of government websites in Uganda, which is situated in East Africa.

2. Research question and contribution

Because of the current low level of usage of government websites and yet potential benefits of the websites in enhancing government-citizen communications especially for developing countries or countries with a large and dispersed population, this research proposes and applies a parsimonious framework of 14 website usability measures. It emphasizes evaluation of selected important websites in one of the developing countries in Africa - Uganda. The research question of this study is: how usable are government websites in Uganda? The focus of evaluation is on the following aspects:

- Design layout of websites
- Navigation of websites
- Legal policies of websites

The contribution of this research is three-fold. First, the thorough yet simple analysis of selected government websites provides the Ugandan government a clear picture of what needs to be improved according to international website design standards. This is different from studies that use automatic tools and provide only general evaluation results with no specific guideline for improvement. Besides, a full version of automatic tools probably is too expensive and hence impractical for governments of development countries.

Second, the parsimonious evaluation framework proposed in the research is useful to any researchers or governments who want to do a quick and easy evaluation of government websites. Evaluation results based on the framework are also easier for government officials to understand.

Third, the research adopted a selected websites approach which represents a middle ground of current research approaches of government websites. At one end of the government website evaluation continuum, some researchers use only one national portal to represent a certain country (Holzer & Kim, 2003; Melitski et al., 2005). While national portals certainly are important in government-citizen communication and are reasonable proxies of the e-government development in different countries, the problem of such an approach is that web usability typically is not maintained in other government websites (Kaaya, 2004). Therefore, results of these studies could be over-optimistic. At the other end of the continuum, some researchers tried to cover as many government websites as possible (Parajuli, 2007). With the fast changing nature of government politics as well as government websites, the full-blown evaluation approach often is not feasible for developing countries. The proposed middle-ground approach is a better choice for countries such as African countries that lack resources (Heeks, 2002). The approach emphasizes governments prioritize their improvement of specific government websites according to local situations and needs.

3. Web usability

Web accessibility and usability affect effectiveness and efficiency of web usage and improve user satisfaction. Many prior studies focus on accessibility although the two concepts are complementary design philosophies which overlap each other (Alexander, 2006). The primary focus of accessibility is access by people with disabilities while usability focuses on the elements of learnability, memorability, effectiveness, efficiency and satisfaction for all website users (Henry, 2002). Usability aims at satisfying the users - a reason why users‘ cultural contexts are considered when designing usable websites (Hillier, 2003). All in all “accessibility is a subset of a more general pursuit: usability” (Henry, 2002 p.1) because websites may be technically accessible but hard to use. Since accessibility is a subset of usability, usability represents an important aspect in the development of government websites.

With the rising importance of websites as a communication tool, many studies have been conducted to evaluate the usability of websites of different private and public organizations. For example, analysis results of the website usability of the 500 fastest-growing private companies in the US, the Inc. 500, show that many websites follow only about half of 11 web design measures such as whether text links are underlined or not (Cappel & Huang, 2007).

Website usability has also been a problem for e-government development. Although international guidelines on webpage development are provided by World Wide Web Consortium (W3C, 2009) to
help website administrators develop usable websites, these guidelines are not often followed (Gwardak & Påhlstorp, 2007). For example, Parajuli (2007) evaluated 17 websites of the Nepal government according to four criteria: transparency, interactivity, accessibility, and usability. Results regarding usability show that it was not so easy to navigate or search information on the Nepal government websites because only 35 percent of websites provided a site map and 29 percent provided a search engine.

Prior studies in the area of website evaluation tend to use a long list of measures to evaluate website usability. For example, Stowers (2002) examined 148 federal websites in the US using 5 dimensions of 54 measures. In another study, the portal websites of 84 cities were evaluated based on 92 measures that were classified into five criteria: security and privacy, usability, content of websites, types of online services, and citizen participation. Only cities with an online population of more than 100,000 were included in that study (Holzer & Kim, 2003; Melitski et al., 2005).

Regarding the selection of government websites, most existing studies evaluate the country or city portal to represent the stage of e-government implementation in different countries. Yet few studies examine the other government websites (West, 2008). West (2008) conducted a comprehensive analysis of 1,667 government websites in 198 nations using 18 measures that focus on the amount of information available and the extent of interaction with users, such as website personalization and email updates of information. Results show that there is much room for improvement. North America and Africa ranked the top and the bottom respectively of the list. Africa had an average score of 26 percent. However, Ghana, an African country, was an exception and had a score of 42 percent and was ranked 13th on the country ranking list.

4. Prospects for e-government

The success of modern governments is partially attributed to the use of information and communications technologies for example in crime fighting and cross-agency co-operation. ICT communication tools allow a two-way communication and sharing of information between citizens and the government. The two-way communication model is desirable for governments because it makes “public relations more ethical” (Mackey, 2003) and results in fair practices and policies that are good for the society (Childers, 1989).

Government websites are sometimes even touted as drivers to eDemocracy because they help boost democratic practices such as voting, deliberation or decision-making. These democratic practices are enhanced by providing opportunities for individuals and communities to interact with government as well as the government to seek input from the community (Riley, 2003). Usable government websites promote a bottom-up approach to democracy. This is in contrast to the top-down approach that directs political reforms to citizens but not from citizens (Traunmüller, 2003). A bottom-up approach to democracy involves decisions based on expressions of interests of people. For example, the Inspector General of Government (IGG) website in Uganda promotes a bottom-up approach. This website supports online petitioning and reporting of offences especially on corruption (IGG, 2008). Such an online democratic function cannot be achieved if the website is unusable.

The critical mass theory of interactive media suggests that interactive media such as websites create “universal access through wide spread usage” and involves “interdependence” (Markus, 1987). Experienced users can influence new users to adopt the technology and new users stay connected with the experienced ones through sharing of resources using the adopted technology. Interdependence leads to mass accessibility. However, it is impossible to attain mass accessibility when the technology is not usable. Government websites that are usable can help improve the relationship between government and citizens through communication and sharing of ideas. They also decrease training, support and maintenance costs, increase user satisfaction, improve government services accessibility and enhance productivity. Website features such as privacy policies and user terms and conditions build trust among citizens (Verma & Ornager, 2005).

5. Country profile - Uganda

Uganda is a republic situated in East Africa. It has an estimated population of 32 million (CIA, 2009). The country’s adult literacy rate is 66.8 percent (United Nations, 2008). With a tremendous increase in Internet subscriptions over the past 3 years (IWS, 2009), about 6.4 percent of Ugandans are Internet users (Hisali, 2007). Government ministries in Uganda have developed websites since 1998 (Kaaya, 2004). According to the 2008 United Nations E-Government Survey, Uganda has a score of 0.3133 in
an e-government readiness index and was ranked 133th (the average for 192 countries is 0.4514). The index examines the e-government development stage, telecommunication infrastructure, and human capital in each country (United Nations, 2008). In another similar study, Uganda was ranked 155th among 198 countries (West, 2008).

Despite its low ranking in e-government readiness, the number of web users continues to grow in Uganda. Therefore, it is advisable for the Ugandan government to create usable government websites to improve communication with its citizens. Yet few studies to date have examined the usability of government websites in Uganda. Kaaya (2004) compared 98 government websites among three African countries (Kenya, Tanzania, and Uganda) according to five perspectives: website visibility, website establishment date, website ownership, website freshness, and website usability. The results show that all 28 Ugandan government websites provided contact information; 39 percent provide user searching tools; 50 percent provided downloadable materials; but none allowed users to submit materials online. While the study provided useful information regarding usability of government websites in Uganda, it did not provide any specific information that facilitates further action or improvement by the government. In West (2008), Uganda had a reasonable high score in publications (89%) and databases (67%). Its score in the category of security policy was only 11 percent but such result was already much better than many countries that did not have any privacy policy at all.

6. Methodology

The objective of this paper is to examine the usability of government websites in Uganda. The central government of Uganda has three branches namely, legislature, judiciary, and executive. Four ministerial websites within the executive branch of the government of Uganda were examined in-depth from March to April 2009. The four ministries were selected because their focus areas (human development, governance, and security) were prioritized in the 2007/2008 and 2008/2009 budgets of the Ugandan government (Suruma, 2007; 2008). Below are websites for the selected ministries:


We conducted a thorough analysis of all levels of pages linked to the four government websites using the “feature inspection method” (Usabilityhome, 2009). The evaluation was conducted by the first author, who has three years experience as a web designer. There are many other usability evaluation methods such as cognitive walkthrough, heuristic evaluation, pluralistic walkthrough, and perspective-based inspection (Hollingsed & Novick, 2007; Nielsen & Mack, 1994; Verma & Ornager, 2005). The problem of these other evaluation methods is that they require involvement of users or more than one expert (Usabilityhome, 2009). We believe using web usability experts are more practical and the quality of evaluation results is likely to be better than involving random users. We did not use automatic web evaluation tools because these tools focus on accessibility by counting the number of errors. Reports provided by such evaluation tools are too general to be of any specific use to web developers.

In assessing the usability of the four selected websites, we did not count the amount of information or number of services available (West, 2008). Because of the different nature of the government websites, it would be impossible for one to make an apple-to-apple comparison. Instead, three categories of 14 website features were examined, namely: design layout, navigation, and legal policies. The features were adapted from the E-Government Toolkit for Developing Countries (Verma & Ornager, 2005) and Web Content Accessibility Guidelines version two (WCAG 2.0). The e-government toolkit was prepared by National Informatics Centre (NIC) and United Nations Educational, Scientific and Cultural Organization (UNESCO) to guide e-government implementers in developing countries. The WCAG 2.0 standard is a set of guidelines that covers a wide range of recommendations for making web content accessible. It was released in 2008 by Web Accessibility Initiative (World Wide Web Consortium, 2009). Details of each category are given below.

6.1 Design layout

A good government website should have a simple user interface. Design layout for webpages should be consistent so that people find it enjoyable and comfortable to access the desired information
without wasting time. A good color scheme and well-structured design elements make content easy to read. The following visual and communication features were evaluated in this category:

- **Design consistency in webpages:** Webpages of a website should be consistent. For example, the design layout and colors should be the same for all webpages. Consistent design avoids user disorientation. User disorientation causes user frustration and loss of interest (Ahuja & Webste, 2001).

- **Visual design for text (font and color formatting):** Formatting of content such as putting page headings or important text in bold or different colors enhances content readability. It also helps separate different kinds of information such as links and normal webpage text.

- **Feedback/inquiry forms and other interactive tools:** These are tools that support faster and efficient communication between the government and citizens and among citizens themselves.

- **Page content sharing tools:** These are tools that enable users to easily share or obtain content of a webpage as a separate computer file. Examples are print, download/save, fax and email options.

- **Zoom options:** These are tools that allow users to customize content by resizing it. These tools help users especially those who are vision-impaired read the text on webpages.

- **Audio content:** Audio content refers to presentation of web content in form of voice. This feature is highly recommended by international usability and accessibility guidelines such as WCAG to facilitate vision-impaired users.

**6.2 Navigation**

A good navigation structure and navigation tools help users find information easily and quickly on webpages. The following website features were examined in this category:

- **Website address (Universal Resource Locator) clarity:** Every online website has an address that uniquely identifies it. The address should portray the name of the institution and should be easy to memorize in relation to what the institution does.

- **Main menu and other links:** Links connect webpages and documents within the website to each other and to other external websites. Links should not be broken and should have names that correspond to the linked information.

- **Sitemap:** A sitemap is a collection of links for all main webpages on a website. It helps users find specific information under a certain section of the website.

- **Search tool:** This is a tool for searching information within a website without browsing through webpages. It is an important tool because it facilitates fast information retrieval.

- **Help/FAQ (Frequently Asked Questions) pages:** These pages provide useful information to users when the users need help. Frequently asked questions are based on the common queries raised by users.

**6.3 Legal policies**

Legal policies on government websites establish a positive image of the websites and enhance citizens' trust of the websites. Privacy policies include security and they protect confidentiality of user information. Online crimes are common these days. Therefore, it is important to have legal policies to ease the worries of users. Website features that were evaluated in this category are shown as follows.

- **Privacy policies:** Privacy refers to the right of a user over certain information. Privacy policies guarantee users ownership over information they are entitled to.

- **Terms and conditions of use:** These are protocols that govern how information should be accessed and used on the website and how services offered by the website are carried out.

- **Copyright/disclaimer information:** Copyright and disclaimer are legal notifications that proclaim the organization as the rightful owner of the website.

**6.4 Coding scheme**

All pages of each website were examined and features on each website were given a rank between 1-5 where 1 means that the website feature does not exist and 5 means that the website feature is, in
terms of efficiency and effectiveness enhancement, a satisfactory usable feature. Tables 1 and 2 show the coding systems of two of the features in the first category of design layout. For example, if a website provides feedback/inquiry forms or other interactive tools and all the features work, it receives a score of 5. Alternatively, if a website provides such features but only more than half of the features work, it receives a score of 4. Similarly, if a website provides no zoom options on any of its pages, it receives a score of 1 and so on.

Table 1: Coding system for feedback/inquiry forms and other interactive tools

<table>
<thead>
<tr>
<th>Score</th>
<th>Measurement attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Absence of feedback/inquiry forms and other interactive tools</td>
</tr>
<tr>
<td>2</td>
<td>Presence of feedback/inquiry forms and other interactive tools and less than half of the features work</td>
</tr>
<tr>
<td>3</td>
<td>Presence of feedback/inquiry forms and other interactive tools and half of the features work</td>
</tr>
<tr>
<td>4</td>
<td>Presence of feedback/inquiry forms and other interactive tools and more than half of the features work</td>
</tr>
<tr>
<td>5</td>
<td>Presence of feedback/inquiry forms and other interactive tools and all of the features work</td>
</tr>
</tbody>
</table>

Table 2: Coding system for zoom options

<table>
<thead>
<tr>
<th>Score</th>
<th>Measurement attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Absence of zoom option on website</td>
</tr>
<tr>
<td>2</td>
<td>Presence of zoom option in less than half of the pages</td>
</tr>
<tr>
<td>3</td>
<td>Presence of zoom option in half of webpages</td>
</tr>
<tr>
<td>4</td>
<td>Presence of zoom option in more than half of the webpages</td>
</tr>
<tr>
<td>5</td>
<td>Presence of zoom option on all pages</td>
</tr>
</tbody>
</table>

7. Results

Evaluation results of the four ministerial websites are summarized in Table 3. Apart from the raw scores of each website, the corresponding percentages to the maximum scores in each category are also calculated for comparison purposes.

Table 3: Evaluation results for website features of Uganda ministerial websites

<table>
<thead>
<tr>
<th>#</th>
<th>FEATURES</th>
<th>Ministerial Websites</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>W1</td>
</tr>
<tr>
<td>Category 1: Design Layout</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Design consistency in webpages</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Visual design for text (font and color formatting)</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Feedback/inquiry forms and other interactive tools</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Zoom options</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Page content sharing tools</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Audio content</td>
<td>1</td>
</tr>
<tr>
<td>Scores</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Scores/Max scores</td>
<td>50%</td>
<td>33%</td>
</tr>
<tr>
<td>Category 2: Navigation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Website address (URL) clarity</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Main menu and other links</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Sitemap</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Search tool</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Help/FAQ page</td>
<td>1</td>
</tr>
<tr>
<td>Scores</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Scores/Max scores</td>
<td>56%</td>
<td>48%</td>
</tr>
<tr>
<td>Category 3: Legal Policies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Privacy policies</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Terms and conditions of use</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Copyright/disclaimer information</td>
<td>1</td>
</tr>
<tr>
<td>Scores</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Scores/Max scores</td>
<td>20%</td>
<td>33%</td>
</tr>
<tr>
<td>Total scores</td>
<td>32</td>
<td>27</td>
</tr>
<tr>
<td>Total scores/Max total scores</td>
<td>46%</td>
<td>39%</td>
</tr>
</tbody>
</table>

7.1 Ministry of Health website
The design for this website is consistent. All pages have similar design in terms of layout and color. The text is clearly formatted with titles in bold. There are no interactive tools such as feedback forms but contact information (telephone and email contacts) is provided. Webpage content is not customizable and cannot be resized by a user. The content can only be obtained manually in case users want to download it because there are no print, download, fax, or email functions. The information is available in text only. Therefore it is hard for vision-impaired people to use and access the website.

The website address is clear and can be easily recalled. The main menu is visible and well-designed. However, many links are broken. The navigation location is shown clearly using page titles when a user browses the website. The website lacks a site map, but it has a search tool that finds information quickly. The search tool uses the atomz search engine which functions efficiently, but results are displayed on the atomz website page. Displaying search results on a different website affects users’ orientation. It also affects their trust if they are redirected to a different website. The website also lacks a Help or FAQ page.

Ministry of health website provides no legal policies. It has no privacy policies, terms and conditions of use or copyright/disclaimer information.

7.2 Ministry of Education and Sports website
The website has an inconsistent design and the homepage has unnecessary animation components. The information on webpages is visible, but it has different formatting styles. Interactive tools such as forms are not provided. However, contact information such as emails and telephone are provided. The website does not have zoom options and page content sharing tools that enable users to obtain or share information with one another. The content is provided only in text format.

The website address is clear. Pages have different menu structures and the main menu links are formatted differently. Navigation through pages is difficult because many pages have no links to connect to previously visited pages or even other main pages within the website. The website has no sitemap, no search tool, and no Help or FAQ pages. However, among the surveyed websites this is the only one that provides a webmaster's email link for users who may have queries about the website.

Legal issues are not catered for on the Ministry of Education and Sports’ website. The website lacks privacy policy and terms and conditions statements. However, it has a disclaimer link but the linked page is missing. It also has a one-line copyright note: "reproduction in whole or in part without permission is prohibited."

7.3 Ministry of Justice and Constitutional Affairs website
The design layout for this website is good and consistent with good use of color for all webpages. The website also provides a feedback form, a discussion forum, a guest book and contact information (telephone, address, email and fax). The feedback form was tested. The form was submitted successfully followed by a confirmation message. However, the discussion forum and guest book did not work. The website lacks tools for customizing content as well as tools for sharing webpage content. The information is available in text only. No audio content is provided.

The address of this website is clear. The structure for links is good. Headings are clearly shown and correspond to links. The main menu structure is well-organized and all links function properly. The website lacks a sitemap. It uses the atomz search tool that is efficient and effective, but it displays results on a different website (atomz.com). There is a webpage with Frequently Asked Questions, but all the questions address other aspects that are not related to usability or accessibility of the website.

The website also lacks privacy policies, terms and conditions of use and copyright/disclaimer information. Instead of showing copyright information, the copyright symbol is linked to a webpage with Uganda’s tourism information.
7.4 Ministry of Foreign Affairs website

This website has a consistent design structure and an outstanding visual design for text. It does not have interactive communication tools such as forms. However, contact information such as physical address, telephone, fax and email are provided. In addition, webpages do not have zoom options nor do they have webpage content tools that enable acquisition and sharing website information. The website does not provide information in audio format.

The web address of this website is clear. There is a good structure for all links and all webpage contents have clear titles that correspond to links. The website does not have a sitemap, but it has a search tool. However, the search tool always gives an error message: “Too many connections to the database!! Please try the search later” upon a search request. This website does not have a Help or Frequently Asked Questions page.

Finally, the website lacks legal information such as privacy policy, copyright notices and terms and conditions of use. However, similar to the Ministry of Justice and Constitutional Affairs website, this website has a copyright symbol which links to a page that provides tourism information instead of the website’s copyright information.

8. Discussion

An evaluation of four government websites in Uganda showed fair results. The average score of inspected features is about 46 percent. In short, all websites have clear and unique addresses but 6 out of 14 features were missing. These missing features are: zoom options, page content sharing tools, audio content, sitemap, privacy policies, and terms and conditions of use.

In the first category of features, all but the Ministry of Education and Sports maintain design consistency in webpages and have good visual design. The Ministry of Justice and Constitutional Affairs website is the only website that has a functioning feedback form. The other three websites provide only contact addresses. None of the websites provides zoom options, page content sharing tools, or audio content. In short, there is much room for improvement regarding interactivity and accessibility. The lack of zoom options and audio content clearly shows that developers of these websites do not follow international standards and hence the websites are not usable for certain groups of users such as people with vision impairment. Among the four ministries, the Ministry of Justice and Constitutional Affairs has the highest score in the first category of design layout features.

In the second category of features, all websites have a clear web address. However, navigation is not so easy on two websites. The website of Ministry of Health has broken links, and that of Ministry of Education and Sports has no links to connect to previously visited pages or even other main pages within the website. No websites provide a sitemap facility and the websites are rather weak in providing help such as FAQ to users. Only the Ministry of Health and the Ministry of Justice and Constitutional Affairs provide search tools using atomz. However, searched results are displayed on the atomz website instead of within the ministries’ websites. Again, the Ministry of Justice and Constitutional Affairs has the highest score in the second category of navigation features.

In the third category of features, no websites provide any privacy policy or terms and conditions of use. Three websites provide limited information regarding copyright. The Ministry of Education and Sports has a one-sentence copyright notice. There is a copyright symbol on the Ministry of Justice and Constitutional Affairs and Ministry of Foreign Affairs websites, but the symbol is linked to a webpage that provides tourism information of Uganda instead of providing copyright information. Overall, all four websites have low scores in this category in comparison to the previous two categories. However, results on this study regarding legal policies are comparable to other studies. For example, in the West (2008) study, 11 percent of national websites of Uganda had a privacy policy, but none provided any statement on security policy. Similarly, privacy and security statements appeared on only 11 percent of 121 websites of travel and tourism organizations in four African countries that included Uganda (Maswera et al., 2008). Studies have shown that concerns about privacy and information security prevent citizens from using e-government services (Chongsuphajasiddhi & Chutimaskul, 2008). Failure to protect private information also affects public image and public confidence of government institutions. For example, Uganda’s defense ministry website was hacked in March, 2009 (BBC, 2009), but the website had no legal terms that could deal
with such cases. Therefore, to make government websites usable, legal policies should not be overlooked.

Designing government websites, such as e-government portals, require planning. Planning includes, for example, selection of partners for service delivery and identifying various channels for service delivery (Maheshwari et al., 2007). Planning creates a clear understanding and realization of users’ needs. Website development and management also requires strategic planning due to organization changes. Considerations in planning of government websites include:

- Defining the purpose of the website, that is, what the website will be used for.
- Identifying the intended audience, their cultural backgrounds, usability skills and interest.
- Checking for resources availability. Identifying the available resources to manage government websites is crucial in planning. Required resources include human resources, that is, people who would maintain the website, and web hosting services which maybe outsourced or hosted in-house. Resources planning leads to sustainability.
- Plans for updates. Planning of government websites should provide guidance on how often the websites should be updated so that users are provided with up-to-date information.

On the technical side, the plan should entail the technologies to be used, security and error handling measures to be applied before the website is built. Without careful planning, technologies that promise development and progress fall short of their promises and yield to problems such as lack of access to the means of communication (Putterill, 2004). It is common and normal that government agencies share resources such as information. Yet sharing of information requires interoperability of systems and applications. Therefore, using compatible technologies in website development can help government agencies overcome interoperability problems.

9. Conclusion and limitations

This research examined the usability of four Ugandan government websites. Using a parsimonious framework of 14 measures, we inspected thoroughly the features of four websites in terms of design layout, navigation and legal policies. Evaluation results show that the selected Uganda websites are partially usable. All websites have clear web addresses and most have consistent design of webpages. However, interactive features are rather insufficient and websites do not provide features that enhance accessibility of websites. All websites are rather weak in stating legal policies. To make their websites usable, web developers of Ugandan websites are strongly urged to have a clear and detailed plan. They should also follow international usability and accessibility guidelines to help overcome the identified usability problems. Weaknesses such as the lack of privacy policies should be rectified to enhance users’ trust of websites. Of course this requires the establishment of related legislation in the country in the first place. The web content should be provided also in other forms other than text to facilitate usage by users with disabilities. To enhance interactions between the government and citizens, it is also vital for ministries to add interactive tools such as feedback forms to their websites.

Website usability is important for successful implementation of e-government. Therefore, it is vital for governments to make an effort to ensure their websites are developed according to international standards. For existing websites, it is equally important for governments to check how usable they are. For future research, we recommend researchers adopt the parsimonious evaluation template used in this study to evaluate government websites in other countries.

Some measures used in the evaluation such as design consistency were subjective. However, the use of only one expert is economically feasible for a developing country. If resources are available, more than one expert can be involved in the evaluation. However, the subjectivity issues should not be a problem if a clear scheme is in place in advance. The evaluation of only four ministerial websites limits the generalization of the results. To provide a more comprehensive picture of the usability of government websites in Uganda, future research can be extended to other ministerial websites in that country. However, we recommend the selective instead of the full-blown evaluation approach.

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References


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Harnessing e-Government Adoption in the SADC Region: a Conceptual Underpinning

Kelvin Joseph Bwalya¹ and Mike Healy²
¹University of Botswana, Gaborone, Botswana
²University of Westminster, UK
kelvin.bwalya@mopipi.ub.bw
M.V.Healy@westminster.ac.uk

Abstract: There has recently been an escalation of e-Government initiatives in the Southern African Development Community (SADC) region, with South Africa, Mauritius, Seychelles and Botswana leading the way towards this cause. Evidence indicates e-Government implementation projects in this region either fail or succeed. Therefore it is important that before actual implementation is commissioned, there is need to understand the different challenges that come with e-Government implementations such as investment risks, failure to be adopted by the general citizenry, abandoning already-commissioned e-Government activities, and so forth. Such problems can be avoided by putting in place a properly and carefully authored e-Government adoption strategy that takes care of the local context and the multi-dimensionality of e-Government. This paper, with strong reference to Davis' 1989 Technology Acceptance Model (TAM) theoretical underpinning, proposes a conceptual e-Government adoption model that may be commensurate with promoting the growth of e-Government in the SADC region. However, the limitation of this proposed model is that it has not been empirically tested and leaves room for its further validation. The paper follows up on the status of e-Government implementation in the SADC region by presenting two case studies that detail what interventions and initiatives have been put in place to encourage e-Government in Botswana and Zambia.

Keywords: e-government; policies, adoption model, Zambia, Botswana, SADC

1. Introduction

Resource-constrained African countries have also started embracing the concept of digital and knowledge economies with a view of putting themselves at the competitive edge in the global economic value chains. This paradigm has ushered in an escalation and efficient use of e-applications (such as e-Health, e-Learning, e-Government, and so forth) in everyday lives of even marginal individuals living in economically excluded places. For the Southern African case, countries such as Mauritius, South Africa, Mozambique, Botswana and Namibia have started putting in place institutional and regulatory frameworks solely dedicated for the advancement of e-Government adoption (UN e-govt. report, 2008). At the regional level, the SADC has sought to develop policies that may be adopted and further adjusted to suit the local contexts of individual countries. Since government hierarchy goes down to community levels, it is important to draw e-Government strategies that do not leave out the poor and marginal individuals. This is very important as it has been observed that the dark side of e-Government is not cost overruns, turf battles or integration issues; it is the low adoption rates (Al-adawi, 2005).

This paper seeks to describe how e-Government has been harnessed in Botswana and Zambia for social inclusion. It looks at strategies and interventions that have been drawn to harness e-Government with tailor-made initiatives bearing strong consideration of the local context. This is important as these countries are not advanced in ICT usage in different socio-economic frameworks, therefore the provision of e-Government using basic technologies e.g. on convertible ICT platforms such as mobile phones and PDAs may be critical to e-Government adoption by the general citizenry. It describes the challenges that have been met in implementing e-Government in Botswana and Zambia. The paper identifies the different technology adoption models and the challenges that have been met in e-Government implementation programs elsewhere. Out of these endeavors, this paper recommends a conceptual e-Government adoption model that may be adopted at the SADC level once it has been empirically tested. While it is the case that a one-fit-all-size e-Government adoption strategy may not be realistic or desirable, the conceptual adoption model advocated here may identify and resolve some of the challenges and issues that are evident with the multi-level, multi-dimensional nature of e-Government. A conceptual model is strongly desired because before an implementation strategy for e-Government is drawn, it is important to meet the following conditions: a) better understand the factors influencing the adoption of e-Government systems, and b) the integration of various e-Government applications (Titah and Barki, 2006).
The paper is arranged as follows: the next section presents the background to the study, which brings out the theoretical underpinnings to the conceptual adoption model proposed in this paper. After this, case studies detailing the different initiatives that have been put in place in Botswana and Zambia are presented. Following this, a suggested conceptual e-Government adoption model is presented. Then, future trends and recommendations are given. The paper concludes by identifying the main conclusions of this work.

2. Background

The potential of e-Government for use to reduce the cost of public service delivery, encourage social inclusion, encourage participatory and inclusive governance, etc., cannot be overemphasized. In addition, e-Government can be a prerequisite to strategic initiatives avoiding rampant corruption and red-tape that characterizes most Africa's government organs and thwarts effectiveness of public service delivery systems (Bwalya, 2009).

Implementation of e-Government projects either fails or succeeds. A look at other countries that have implemented e-Government successfully prove that in such countries there have been well-authored strategies and implementation plans. Examples of countries that have taken this approach include Singapore which has an e-Government Action Plan (eGap), Tanzania and Mozambique which have put in place e-Government implementation strategies and roadmaps (Thong Tee, 2003; Menda, 2005).

The totality of e-Government adoption can be looked at as one comprising two constructs: the individual beliefs and the organizational characteristics and these can inform the adoption model that can be appropriate in any specific situation. The two most important constructs of intention to engage in e-Government are to get information from government organs and line ministries, and to engage in transactions with the government. Warkentin et al., (2002) identifies trust as the single most determining factor for people to engage in e-Government applications dealing with sensitive information such as financial (bank card details, etc) or personal information. For an African perspective, the intention to engage in e-Government is also partially influenced by the perceived benefit of using such a platform. This perceived benefit can be looked at as a return on investment (ROI) of one's time, effort, financial investment, and psychological, of engaging technology to seek a platform with the government. If the return on such basic investment is low, it is anticipated that an ordinary African will go for the traditional way of interaction with the government (Kamal and Themistocleous, 2006).

Several studies have looked at different technology adoption models as employed to infuse technology into socio-economic frameworks of different locations. Fan and Zhang (2006) specifically proposed a conceptual model for government to government (G2G) information sharing in the context of the e-Government environment. This was done in the spirit to reduce bureaucracy that may be evident in many government agencies (Titah and Barki, 2006). With this model, information sharing amongst different government branches was somewhat made easier. After reviewing several technology acceptance models such as the Davis' technology acceptance model (TAM), the Diffusion of Innovation (DOI) model, the unified theory of acceptance and use of technology (UTAUT), Fan and Zhang (2006) identified 8 common factors that have been utilized in different models such as: a) perceived benefits, b) perceived risks, c) top management support, d) IT support, e) costs, f) external pressures, g) critical mass, and h) championship. These 8 factors were accordingly incorporated into a conceptual e-Government adoption model that they proposed.

Kamal and Themistocleous (2006) have also conducted a study to ascertain technology adoption in a complex environment such as a local government authority with hierarchical bureaucratic structures with utter commitments to outmoded cultural values. Kamal and Themistocleous have identified a set of factors from literature that influence the uptake of e-Government. These are: knowledge of technology risks, IT capabilities, market knowledge on new technologies, managerial capabilities, project championships, external pressures, citizen's data privacy and security, and Return on Investments (ROI).

In their pursuit to better understand the factors that affect e-Government, Al-adawi et al (2005, P. 2), identified 4 questions they called ‘critical’ for the adoption and encapsulation of e-Government into the socio-economic setups. The following questions were identified and incorporated into a model for e-Government adoption: 1) How are intentions towards the use of e-government formed and to what
extent are they related to the actual use of e-government? 2) To what extent the intentions to get information and to conduct transactions differ from each other? 3) What are the beliefs that influence citizens’ propensity to use e-government? How do these beliefs affect their intentions towards the use of e-government? 4) Are there any perception and adoption differences between segments of citizens on the basis of their technology readiness and demographic characteristics?

Bélanger and Carter (2008) undertook a study which analyzed the impact of trust and risk perceptions on one's willingness to use e-Government services and developed a model that include constructs supporting trust of the internet (TOI) and trust of government (TOG). Their study utilized data from a citizen survey that indicated that the disposition to trust positively affects TOI and TOG.

The different benefits of e-Government cannot be overemphasized. Choudrie and Dwivedi (2004), also quoting from UNDP (2001), state that according to the estimates that have been made, e-Government systems are already helping save approximately 2% of the annual United States Gross Domestic Product (GDP).

Several authors (e.g. Warkentin et al., 2002) have pointed out that data security, accessibility and perceived confidentiality influence individual adoption of e-Government adoption to a greater extent. The factors affecting e-Government can be divided into individual and organizational. Titah and Barki (2006) have suggested that apart from organizational factors, individual beliefs of citizens have a significant influence on the adoption of e-Government services. With strong reference to Davis' technology acceptance model of 1989, it is known that individual beliefs such as perceived usefulness (PU) and perceived ease of use (PEOU) have been considered as the dominant beliefs that affect the intention to adopt or use the technology in a business to consumer (B2C) model (Warkentin et al. 2002).

Heeks and Santos (2009; p. 3) unleashed a study where they gave some perspectives on the adoption of public sector innovations – “one that understands adoption as based on the behaviour of individual actors set within a contextual framework”. Their motivation came from the fact that e-Government faces low usage rates and stated that there exists huge gaps between designers and adopters. In their study, they employed case research to study the practice-based problem of e-Government where it was thought that the experiences of the actors are important and the context of action is critical (also cited in Benbasat et al., 1987). Their study identified different factors that affect the role of the designers (as principals) and adopters (as agents).

Colesca (2009) identifies five different steps to making e-Government happen and these are: Develop a vision; conduct an e-readiness assessment; identify realistic goals; get the bureaucracy to buy-in and develop a change management strategy; and build public-private partnerships. It is thus imperative that a strategy be drawn before implementation can be initiated (e.g. strong reference to a given adoption model). It is for this reason that this paper emphasizes and draws a conceptual adoption model that can be used to encourage e-Government proliferation. In order to do that, it is desired that a conceptual and/or theoretical model be erected to act as the basis for planning the constructs of the model. For the purposes of this work, the diagram below shows the conceptual theoretical model that informs the discussion in this paper. This simplistic model may be critical for drawing a conceptual model to be used in a resource-constrained nation where the psychological state of the individual has more command to adopting a technology.

Note that this model is an extension of Davis’ 1989 TAM as it starts from Perceived Ease of Use (PEOU) and Perceived Usefulness (PU). The theoretical adoption model demonstrates that PEOU and PU are the most important ingredients that create value for the adoption of e-Government applications. This value can be split amongst three different entities and citizen’s intentions to engage in e-Government: Transactions, seeking public service and getting general information. Transactions may be such applications as e-Commerce, internet banking (business-to-consumer (B2C) model) and so forth. Seeking public service may involve downloading application forms for a passport from a government website and participating in decision-making such as e-voting. Getting information involves such activities as checking recommended prices for farm products, checking weather forecasts, etc. these three different e-Government entities and applications can further lead to effective e-Government adoption. However, as the case is, there is need to incorporate further attributes so that this model becomes commensurate to the local conditions when designing an e-
Government model. For the case of SADC, the contextual environment is somewhat similar in most of the countries that belong to this regional grouping.

Perceived Ease of Use (PEOU)

Seeking Public Service (e.g. apply for passport online, e-voting)

Getting information (e.g. check prices for farm products, check weather focusts)

Transactions (e.g. internet banking, e-Commerce)

Effective e-Government Adoption

\[ \sum \text{ Value} \]

Perceived Usefulness (PU)

(Anticipated Benefits)

Figure 1: Theoretical e-Government adoption model (an extension of the model that appears in Al-adawi, Z., Yousafzai, S., and Pallister, J. (2005)).

The next section presents a case study that looks at the contextual environment of Botswana and Zambia and brings out interventions that have been put in place towards proliferation of the e-Government concept.

3. Case studies
a) Botswana

Botswana has a dedicated agenda towards promoting e-Government because the leaders have understood the importance of e-Government to an appreciable extent. Quoting from Mmegi Newspaper (2009, September), the potential of e-Government on improving the governance value chains in Botswana is explicitly outlined. For the case of Botswana, e-Government delivers far greater stakeholder value when it is designed within the context of a broader service delivery reform agenda. This ‘whole-of-government strategy’ leverages infrastructure, reduces cost and improves the on-line experience for clients. This newspaper projected that by the end of 2009, all appropriate government services will be on-line by 2009. Has this been achieved? Although Botswana does not have a formal e-Government strategy as do Tanzania, South Africa, Mauritius it has scored positive gains on the e-Government Indexes (Bwalya, 2009). It is considered an emerging ICT-usage-powerhouse in Sub-Saharan-Africa (SSA). Recent endeavors have seen it successfully implement massive projects such as the construction of the Kgalagadi optical fibre network, full liberalizations of the telecommunications sector, putting in place sound ICT sector regulatory and institutional frameworks, dedicated ICT policy, setting up of Botswana IT hub, etc. These interventions have also been solidified with the convergence of wireless technologies which enable individuals of all statuses to use mobile technologies such as mobile phones, personal digital assistant (PDAs) etc to communicate, manage data and generally participate in the digital boom.

Gillwald & Stork (2008) has done a study where Botswana emerged as one of the countries with a higher fixed-line penetration with 11 to 18% of households having a working fixed-line phone. By the end of March 2002, there were 278 000 mobile subscribers as compared to 142 000 fixed line subscribers (Monnane. 2003). In 2007, mobile penetration had grown to 87 per 100 inhabitants and 250 000 fixed line subscribers (Lazauskaite, 2008). Compared to other countries, Botswana’s mobile penetration (teledensity) has been remarkable, from nothing in 1997 to 14.24/100 inhabitants in 2002 and 76 per 100 inhabitants in 2007 (Lazauskaite, 2008), only second to South Africa in the region. In
terms of mobile lines as percentage of total lines, Botswana is behind Lesotho, South Africa and Tanzania only.

With the introduction of cheap Taiwan or Chinese phones on the local telecommunications market, acquiring a handset is no longer a far-fetched dream for Botswana citizens (Batswana). Telecom operators e.g. Mascom and Orange Botswana have started offering internet accessibility on mobile phones (Pheko, 2009). People in the rural communities can also access internet or mobile signal coverage as appropriate ICT infrastructure is now being erected even in rural areas as guided by the rural telecommunications initiative. This initiative has brought modern telecommunications, including Internet access, for the first time to 147 villages (Pheko, 2009). When fully implemented, the project will ensure that more than 50% of Batswana living in the remote areas of the country will be provided with basic telecommunications services. Further, the Botswana Telecommunications Corporation (BTC) has launched VSAT technology that, it is hoped, will play a role in bringing services to remote areas through the use of satellite and overcome limitations placed on traditional services by vast distances and difficult terrain (Mesa, 2007). It is anticipated that Botswana’s telecommunication industry is likely to record growth in the year 2009 placing it ahead of the telecoms market of South Africa and Nigeria in terms of teledensity. This forecast follows the launch of BeMobile by BTC in 2008 (Pheko, 2009).

A number of significant initiatives have been introduced in the telecoms sector to encourage the growth of this sector. Lewin et al. (2004) has noted that a Convergence Bill is under preparation to update the 1996 Telecommunications Act. Debate has focused on how far this Bill can include provisions that would extend liberalization. Another initiative has been the putting in place of the Cybercrime Bill, originally published in the Government Gazette in October 2007 (Mesa, 2007). The Convergence Bill encourages further liberalizations and convergence of both wireless and fixed technologies. Pheko (2009) notes that the effect of this has been the following: a) licensing of beMobile (the BTC mobile arm); b) rollout of product packages and price offerings to attract more customers by Orange Botswana and Mascom Wireless; c) establishment of own International Voice Gateways by Mascom Wireless and Orange Botswana; d) introduction of VoIP services by PTOs and VANS; e) upgrading of Public Land Mobile networks to introduce 3G services; and f) rollout of WiMax services to some urban areas; g) increase in the number of registered VANS. (In 2008, 25 VANS were registered and total number of VANS is now 43.). It is thought that a vibrant telecommunications sector may facilitate appropriate e-Government interactions (Pheko, 2009).

Despite these novel interventions to encourage e-Government, the limitations have been lack of trust and limited education levels of a greater portion of the population (Pheko, 2009). Due to lack of effective promotional and awareness campaigns of e-Government benefits, many ordinary citizens do not find the urge to engage in e-Government. Given this scenario, it is fair to state that there is a lot of potential of e-Government in Botswana as more and more people are having access to mobile phones which can further be used as platforms for internet access. This further allows citizens, government and businesses to interact constructively using interconnected technologies.

b) Zambia

For the case of Zambia, very little has been done to encourage e-Government. Despite a poverty reduction strategy (PRS) in place, the country does not have a dedicated e-Government strategy. In fact, e-Government has only been mentioned once in Zambia’s ICT policy launched in 2006 (Bwalya, 2009). Several government departments such as the Ministry of Home Affairs, Immigrations department, have tried to implement e-Government by encouraging online applications for resident/work permits; VISAs and so forth (Simenda, 2009). This however, has been met with a lot of resistance and the expected users have not given it a buy-in. This may be because strategic strategies that should have been undertaken, as outlined by Colesca (2009), have not been employed.

The 2008 e-Government Index computed by the United Nations DPEPA recognized Zambia as a country with deficient e-Government capacity because its index was way below 1.00 (0.22), although this is the case, the country has shown massive improvement from lack of online presence in 2005 to occupying 158th position of the countries surveyed in 2008 (UN e-govt. report, 2008). Although Zambia is just at the emerging stage of e-Government implementation, there are several initiatives that are in the pipeline for e-Government development. The government is about to engage a
consultant to help come up with the e-Government adoption and implementation strategy (Simenda, 2009). At an organizational level, Zambia enjoys massive support on e-Government implementation from regional groupings such as SADC and COMESA which have in place dedicated e-Government implementation action plans and roadmaps (Bwalya, 2009). The onus is on the country to adopt these different legal and regulatory framework guidelines and instruments and adapt them to the local culture.

Since access to the internet is also vital to let the different players in an e-Government environment interact, it is important that we first look at the internet (both broadband and wireless) penetration in Zambia as this gives a snapshot of e-Government adoption in general. The following table shows the number of internet subscribers (both broadband and wireless) in Zambia pitted against the levels of internet penetration in its neighbouring countries.

Table 1: Internet penetration in the Zambia and neighbouring countries region (2009)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>12,799,293</td>
<td>30,000</td>
<td>550,000</td>
<td>4.3 %</td>
<td>1,733.3 %</td>
<td>0.8 %</td>
</tr>
<tr>
<td>Botswana</td>
<td>1,990,876</td>
<td>15,000</td>
<td>100,000</td>
<td>5.0 %</td>
<td>566.7 %</td>
<td>0.2 %</td>
</tr>
<tr>
<td>Malawi</td>
<td>15,028,757</td>
<td>15,000</td>
<td>139,500</td>
<td>0.9 %</td>
<td>830.0 %</td>
<td>0.2 %</td>
</tr>
<tr>
<td>Mozambique</td>
<td>21,669,278</td>
<td>30,000</td>
<td>350,000</td>
<td>1.6 %</td>
<td>1,066.7 %</td>
<td>0.5 %</td>
</tr>
<tr>
<td>Namibia</td>
<td>2,108,665</td>
<td>30,000</td>
<td>113,500</td>
<td>5.4 %</td>
<td>278.3 %</td>
<td>0.2 %</td>
</tr>
<tr>
<td>Tanzania</td>
<td>41,048,532</td>
<td>115,000</td>
<td>520,000</td>
<td>1.3 %</td>
<td>352.2 %</td>
<td>0.8 %</td>
</tr>
<tr>
<td>Zambia</td>
<td>11,862,740</td>
<td>20,000</td>
<td>700,000</td>
<td>5.9 %</td>
<td>3,400.0 %</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>11,392,629</td>
<td>50,000</td>
<td>1,421,000</td>
<td>12.5 %</td>
<td>2,742.0 %</td>
<td>2.2 %</td>
</tr>
</tbody>
</table>


The information shown in the table above demonstrates that, relatively speaking, Zambia has a sizeable number of people accessing the Internet. This means, that assuming everyone who accesses internet has adopted and uses the e-Government platform in continuance patterns, the government will only reach 6% of the total population. Given these statistics, it is fair to ask whether it is logically coherent for the government and other cooperating partners to engage into massive tasks of putting in place systems, institutional and legal frameworks that will create an enabling environment for e-Government to thrive. It is also worth investing the issues of lack of trust in online applications, low ICT literacy levels, exorbitant costs of internet access, scarcity of computers, etc., and how these impact on the adoption of e-Government in the case of Zambia. It is impossible to assume that the total number of people who have internet access in Zambia all use e-Government services. In fact, less than half of 700,000 people may be even aware of e-Government in Zambia. These issues can be taken care of by drawing e-Government implementation strategies by closely following a carefully drawn conceptual adoption model. As the Zambian government’s organs and line ministries have just started stamping their presence on the internet, with very few people accessing the internet and undeveloped ICT infrastructures, it can be aptly said that Zambia is at the emerging stage of e-Government implementation.

Mulozi (2008) looks at the current connectivity issues in Zambia which may contribute to the poor development and adoption of e-Government services. He mentions that Zambia’s connectivity is characterized by a few major Internet providers, high dependency on VSAT access to the Internet, and a poor landline telecom system. The rural areas are most hit as most of these areas have dilapidated ICT infrastructure. Much of rural Zambia is not serviced by ground telephone and let alone fibre optic cables – the mainstay of communication – which are still being constructed. Zambia’s ISP services are concentrated along the railway line from Livingstone to Chingola. The country depends on VSAT access as it is not yet connected to the international submarine cable which interconnects with the global Internet backbone. Mulozi (2008) further mentions that out of the eleven registered
Internet Service Providers (ISPs) in Zambia, six provide services to rural areas with an estimated 17,800+ clients. More than 50% of the clients use dial-up services.

A look at these websites reviews that issues of usability have not been considered to any appreciable degree during their design. Also, since Zambia has 73 different languages, providing web content only in English may be disadvantageous to some of the citizens. These web pages do not cover even half of the services that the government offers in a conventional and ordinary setup. It is vital to mention that such issues need to be followed, especially in the testing stage of the conceptual e-Government adoption model proposed in this paper.

The two cases of ICT landscape in Botswana and Zambia provide good illustration of e-Government in the region. Since the SADC bloc has countries which have almost the same contextual environment, a look at the aforementioned countries may be somewhat representative enough for the SADC bloc. With reference to these two cases and a look at the factors identified from different literature sources, (as in the background), it is now possible to compile a list of factors that may affect domestication of e-Government in the SADC bloc. The next section describes the proposed conceptual model.

4. Proposed conceptual adoption model

Since different factors that have an effect of e-Government have been outlined, it may be fine to now define the suggested conceptual model which will be subjected to future testing and validation. This model is mainly based on Davis’ 1989 TAM with extensions to so that local conditions are taken into consideration. The proposed model also uses some constructs from Wangpipatwong et al. (2008) where they discussed not only adoption, but also continuance use of e-Government. In short, our proposed model combines, primarily Wangpipatwong and Davis’ e-Government adoption models, not forgetting some other critical factors identified in other empirical studies that have been implemented by other researchers.

In 1989, Davis extended the Theory of Reasoned Action (TRA) to come up with the Technology Acceptance Model (TAM) (Davis 1989). His model was based on Fishbein and Ajzen’s (1975) reasoning that that user’s behavioral intention is the single best predictor of actual system use. This intention is determined by two particular beliefs: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Davis defines PU as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989), and PU as “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989). TAM also hypothesizes that PU is influenced by the PEOU.

TAM has been tested empirically in different parts of the world and it has proved that it is one of the most reliable and easy models of explain individual’s intention of adoption of a technology. It has also proved to high quality especially in yielding statistically reliable results (Moon and Kim, 2001). Specifically, TAM has been used to explain user’s initial intention to engage and use a technology. However, there are instances when it has been used to predict long term intention of citizens to use a technology. Studies by Venkatesh and Davis (2000), Kim and Malhotra (2005) have demonstrated, in their longitudinal studies, that PU and PEOU are one of the most important ingredients and determinants of citizen’s intention to engage in a technology.

The following hypotheses, as depicted in the original Davis’ 1989 TAM model, are to be taken into consideration.

**H1**: Perceived ease of use of e-Government websites will positively influence perceived usefulness of e-Government websites and applications.

**H2**: Perceived usefulness of e-Government websites will positively influence citizen’s adoption of e-Government websites and applications.

**H3**: Perceived ease of use (usability) of e-Government websites will positively influence citizen’s adoption of e-Government websites and applications.

Moon and Kim (2001) have stipulated that the TAM has to be given additional factors or incorporated with other IT acceptance models to provide an even stronger model that may be commensurate to
any given environment. These factors should take care of the local context and the multi-dimensionality of e-Government to stand any chance of success. The direct benefit of such a tailor-made model is that it can be used when drawing e-Government implementation plans. For this reason, the proposed model in this paper extends the TAM primarily by adding ‘Appropriate ICT infrastructure + lower access costs’ as the major infusion to the TAM. It also adds other factors that may limit the penetration of e-Government in an African setup. These factors have been identified by different authors (check background section above) as major impediments to technology diffusion in Africa and elsewhere. Lack of appropriate ICT infrastructure has been identified as one of the major impediments to technology adoption by many ordinary individual Africans.

Figure 2: Proposed conceptual model of citizen’s adoption of e-Government in the SADC region

In addition to the technology adoption attributes depicted in the TAM, the following extensions to the TAM have been included in the proposed model:

**H4:** Appropriate ICT infrastructure and lower costs to access the basic technologies impacts positively on usability and correspondingly on Perceived Ease of Use.

**H5:** Language of content (both English and local language) has a significant positive impact on easing the complexity of use of e-Government websites and other e-applications and therefore impacts positively on Perceived Ease of Use.

**H6:** Appropriate ICT infrastructure and lower access costs will have a positive impact on the overall intention to use and adopt e-Government.

**H7:** Perceived risks, if not controlled and local culture, may have a negative impact on the adoption of e-Government websites and applications.
H8: Data privacy and security, if not controlled, may negatively impact on the adoption of e-Government websites and applications.

H9: A dedicated and appropriate user support mechanism may assure individual citizens of appropriateness of engaging in e-Government and this will positively impact on both e-Government adoption and continuance use of e-Government.

H10: Appropriate legal, regulatory and institutional frameworks will positively impact on motivation of ordinary citizens to engage, adopt and continue the use of e-Government.

H11: Appropriate e-Government adoption framework will positively impact on continuance use of e-Government.

5. Future trends

This paper has just presented the conceptual e-Government adoption model, which in the opinion of the authors, may be commensurate to SADC contextual ICT landscape. However, this model has to be empirically tested and validated for it to be of more use and value. It is for this reason that the next phase in this research should involve the testing of the conceptualized model by using appropriate data collection instruments that are going to investigate the hypotheses presented above. The proposed model can be tested with the use of specialized statistical phenomena such as using Cronbach’s alpha which is a statistical measure used to calculate reliability.

The complexity of the SADC context, such as Zambia having 73 languages, usability of web pages and platforms, appropriate public services that may be offered to an ordinary Africa through the web, and other issues in this context need to be further probed.

Future studies are also desired to examine the different antecedents of each construct to expand the explanatory power of the model. This would probably even add some more attributes to exactly conform to the local context in SADC.

6. Conclusion

This paper has looked at the different factors that inhibit e-Government growth and has sought to outline some of the influences that affect the success or failure of e-Government projects. The paper has reviewed appropriate literature concerned with the different challenges for e-Government implementation, and has looked at different adoption models that have been erected to encourage e-Government growth. In addition, the paper has reviewed the ICT landscape in Botswana and Zambia to identify what is on the ground concerning the status of e-Government in the SADC bloc.

Out of the aforementioned endeavors, the paper has proposed a conceptual e-Government adoption model that extends Davis’ TAM to include other attributes and constructs that may be relevant to the local context of SADC. These other attributes have been identified from the literature reviews and the two cases presented. It is anticipated that the proposed model may be used as a guide to e-Government strategy formulation and implementation and may rightly be adopted by governments or other co-operating partners. Proposed model creates premise for future adoption of e-Government in the SADC region.

The only limitation to this model is that it has not been formally empirically tested or validated to confirm the anticipated benefits that it has to offer and its appropriateness to the SADC bloc. Thus, it is appropriate to mention that future works include empirical testing of this model. This may involve validating the different constructs presented in this model and this endeavor may probably lead to the model being modified to conform to the contextual environment of the SADC region more appropriately.

References


The Acceptance of the e-Filing System by Malaysian Taxpayers: A Simplified Model

Anna Che Azmi and Ng Lee Bee
University of Malaya, Malaysia
annaazriati@um.edu.my

Abstract: The e-filing system is an important e-government service in Malaysia. This paper investigates the factors that lead to the acceptance of e-filing among taxpayers by using TAM. This study proposes a model consisting of three constructs, which are perceived usefulness, perceived ease of use and perceived risk. The model proposed by this study is a simpler model compared to other studies on e-filing. The confirmatory factor analysis shows that the model is an adequate fit. Based on the data collected from 166 respondents, the results showed that the proposed model explained up to 61% of the variance in behavioral intention. All of the variables significantly influence behavioral intention. The perceived risk construct has a negative association with the perceived usefulness construct. However, there is no significant association between the perceived risk and perceived ease of use constructs.

Keywords: taxation, e-filing, technology acceptance model, perceived risk, e-government, Malaysia

1. Introduction

e-Government facilitates the public’s access to government information and services. Malaysia recognizes the potentials of e-government and has invested a substantial amount of capital in developing its e-government. Malaysia began its e-government initiatives in 1997 and continues to promote its development until today. An annual Global e-government survey which evaluates online government websites of 198 countries scored Malaysia at 36.9. This was an improvement from the score in the 2006 survey which was 20.8. To date, the Malaysian e-government portal offers more than 1,000 services online and more than 3,000 downloadable government forms. The electronic tax-filing is one of the most popular e-government services in Malaysia.

The electronic tax-filing system was introduced in 2006 by the Malaysian Inland Revenue Board (IRB) to the Malaysian taxpayers, which includes individuals and companies. In its 4th year of implementation nearly 1.25 million Malaysian taxpayers has filed their returns electronically. Under the e-filing system, taxpayers need to fill their tax returns through the internet. Throughout this process, the system provides some guidance to the taxpayers on the correct information to include in their tax return. The system also calculates the amount of tax assessed based on the information that was provided in the tax return. The forms are then, sent electronically to the IRB. Through the electronic tax-filing system, the IRB improves the efficiency of the tax assessment method, by increasing tax collection and reducing computation errors. Furthermore, the e-filing system also benefits taxpayers because tax returns are sent electronically to the IRB which saves taxpayers’ time. In the e-filing promotion campaign, the tagline ‘easy to use, accurate and safe to use’ were used.

E-filing has potentials to benefit both taxpayers and the IRB, but only if it is actually used by the Malaysian taxpayers. Thus, the purpose of this study is to identify the factors that affect taxpayers’ decision to use the e-filing system. This study contributes to the literature of e-government in two ways. Firstly, this study suggests a simplified version of the TAM model for the adoption of the e-filing system. This simplified model contains 3 important variables for e-filing; they are perceived ease of use (PEOU), perceived usefulness (PU) and perceived risk (PR). In most studies of e-filing (e.g. Carter et al, 2008; Fu et al, 2006), the PR variable was found to be a significant influence in explaining behavioral intention. In addition, these 3 variables epitomize the ideas behind the Malaysian IRB’s introduction of the e-filing system in Malaysia. Secondly, to date, no study, known to the authors, has been conducted to study taxpayers’ acceptance of the Malaysian e-filing system. Thus, this study is a preliminary study of this kind. The following section illustrates the research model and hypothesis used in this study. This is followed by the methodology section, the data analysis section, discussion and suggestions for future research.
2. Research model and hypothesis

There have been a growing number of literatures on e-government. According to Lofstedt (2005), the e-government literature could be approximately divided into 5 various strands: management and organization, e-services, e-democracy, interactions and e-security. Lofstedt (2005: 42) concluded from her review of literature in this strand is that ‘few studies have explored the core factors that influence citizens adoption of e-services’. Thus, this article contributes to the e-government services literature by focusing on aspects that are important for the adoption of e-government services.

Theoretical models such as Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980), the Theory of Planned Behavior (TPB) (Ajzen, 1991), and the Technology Acceptance Model (TAM) (Davis, 1989; Davis, et al., 1989), attempt to explain the relationship between user beliefs, attitudes, intentions, and actual system use. Among these theories, TAM was widely used and accepted to explain the relationship between perceptions and technology use (Agarwal and Prasad, 1999; Morris and Dillon, 1997). According to TAM, individuals accept a particular system if they believe in the system. These believe are perceived usefulness (PU) and perceived ease of use (PEOU). PU is defined as the user’s perception of the degree to which using the system will improve his or her performance in the workplace. PEOU is defined as the user’s perception of the amount of effort they need, to use the system. Past research have provided evidence of the significant effect of perceived ease of use and perceived usefulness on behavioural intention (BI) (Venkatesh and Davis, 1996; Davis, et al., 1999; Jackson et al., 1997; Agarwal and Prasad, 1999; Hu et al., 1999; Venkatesh, 1999, 2000; Venkatesh and Davis, 2000; Venkatesh and Morris; 2000). In the e-government literature, various studies (e.g. Carter and Belanger, 2005; Wang et al., 2005) have also adopted TAM in their model to test or evaluate the citizen adoption of e-government services. Perceived usefulness and perceived ease of use were found to be significant constructs in the e-government adoption literature (e.g. Carter and Belanger, 2004, 2005).

Past research was inconsistent on whether perceived usefulness (PU) or perceived ease of use (PEOU) was the stronger determinant. According to Davis (1989), perceived usefulness (PU) is shown as a primary determinant and perceived ease of use (PEOU) as a secondary determinant of intentions to use a certain technology. Fu et al. (2006) found that behavioral intention was largely driven by perceived usefulness. However, Wang (2002) found that perceived ease of use (PEOU) was a stronger predictor of people’s intention to e-file than perceived usefulness (PU). According to the findings in Wixom and Todd (2005), perceived usefulness (PU) was influenced by perceived ease of use (PEOU). Based on the literature mentioned above, the following hypotheses were formulated for the 3 constructs (i.e. PEOU, PU and BI):

H1: Perceived ease of use (PEOU) will have a positive effect on perceived usefulness (PU) of the electronic tax-filing system.

H2: Perceived ease of use (PEOU) will have a positive effect on behavioral intention (BI) to use the electronic tax-filing system.

H3: Perceived usefulness (PU) will have a positive effect on behavior intention (BI) to use the electronic tax-filing system.

The attitude construct from the original TAM model, however, was left out because it did not fully mediate the effect of perceived usefulness on behavioral intention (BI) (Venkatesh, 1999). Based on several other studies (Mathieson, 1991; Adam et al., 1992; Straub et al., 1995; Gefen and Straub, 1997; Venkatesh and Morris, 2000) the effect of perceived ease of use (PEOU) or perceived usefulness (PU) on the attitude construct have been disregarded. Instead, the impact of perceived ease of use (PEOU) and perceived usefulness directly on the actual system usage have been the focus. Thus, this study adapts the technology acceptance model (TAM) by dropping the attitude construct.

One other common variable that have been included in the study of e-government is perceived risk (PR) (eg. Carter et al, 2008; Fu et al, 2006). The findings from these studies were inconclusive. In Fu et al. (2006), the perceived risk variable significantly influence the behavioral intention of taxpayers who file their tax returns through the internet. However, Belanger and Carter (2008) found that
perceived risk did not significantly reduce the intention to use e-government services. One possible reason for this is due to the different risk perceptions that users may have about e-commerce and e-government transactions. Belanger and Carter indicated that future studies could observe the constructs that may impact perceived risk.

Thus, perceived risk is included in this research model and is based on two risk facets, which are privacy risk and performance risk. For the purpose of this study, perceived risk (PR) is defined as taxpayers’ perception on the reliability of the system’s usefulness/functionality and the control of their personal data information in an online environment. As indicated earlier, this definition is based on two risk facets, which are privacy risk and performance risk. Privacy risk in this study refers to the safeguard of various types of data that are collected during taxpayers’ interaction with the e-filing system. Under the e-filing system, taxpayers are concerned whether third parties could access their personal tax information without their knowledge or permission. Although this concern is also present in the physical world but this issue is important due to the special characteristics of the Internet (Hoffman et al. 1999; Friedman et al. 2000). While, performance risk refers to the possibility a system malfunctions or the system’s failure to deliver the promised benefits. The risk factor that taxpayers’ perceived to have towards the system, which promise to complete their transaction securely and to maintain the privacy of their personal information, will affect their voluntary adoption of the e-filing system.

The combinations of privacy and performance risk that make up perceived risk have been shown to inhibit service evaluation (e.g. perceived usefulness) and behavioral intention to adopt. The system ease of use is likely to affect the taxpayers’ perception of risk. Systems that are perceived to be complex, with steep learning curves are likely to be thought as risky to adopt and use. Taxpayers will perceive the system to be problematic, suffer from performance problems and usage uncertainties. On the contrary, if taxpayers perceive the system as easy to use, taxpayers evaluate the system positively and this leads to adoption. Because the system is highly usable and is less likely to cause usage concerns, therefore perceived ease of use may function as an important risk-reducing factor. Drawing from these arguments, this study proposes the following hypothesis on the perceived risk (PR) construct.

H4: Perceived risk (PR) will have a negative effect on behavioral intention (BI) to use the electronic tax-filing system.

H5: Perceived ease of use (PEOU) will have a negative effect on perceived risk (PR) of the electronic tax-filing system.

H6: Perceived risk (PR) will have a negative effect on perceived usefulness (PU) of the electronic tax-filing system.

Figure 1 presents the research model of this study

3. Research methodology

Convenience sampling method was used for this study and the sample size is 200 respondents. The targeted respondents were taxpayers residing in Kuala Lumpur (i.e. capital city of Malaysia). Questionnaires were distributed through emails. Taxpayers are selected based on two criteria. Firstly, salaried taxpayers were chosen because they are the group of taxpayers that was eligible for e-filing since its implementation in 2006. Secondly, taxpayers who file their own tax return were considered as a sample in this study because of their hands-on experience with the e-filing system.

The survey instrument is a 7-point Likert scale questionnaire survey, divided into three sections. Section A of the questionnaire measures the taxpayers’ perception on the e-filing system and their behavioral intention to adopt. This section was adapted from Hung et al. (2006), Wang (2002), Davis (1989) and Davis et al., (1989). It has 3 constructs, which are perceived usefulness (PU), perceived ease of use (PEOU), and behavioral intention (BI). In section B, perceived risk of taxpayers was measured using two different dimensions, which were performance risk and privacy risk. This section consists of 6 statements. These statements were extracted from Featherman and Pavlou (2003), however, some modifications were made to tailor them to the e-filing system. Section C of the questionnaire contains questions on taxpayers’ computer and internet experience. Statistical Package for Social Science (SPSS) and Analysis of Moment Structure (AMOS) were used to analyze the data.
Figure 1: Research model

4. Results

A total of 182 sets of questionnaires were received and 16 of these questionnaires were not usable. Table 1 indicates that the respondents were IT literate as more than 50% of the respondents had more than 6 years of computer and internet experience.

Table 1: Computer and Internet experience of respondents

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>1 – 3 years</td>
<td>4</td>
<td>2.4</td>
</tr>
<tr>
<td>4 - 6 years</td>
<td>15</td>
<td>9.0</td>
</tr>
<tr>
<td>7 – 9 years</td>
<td>32</td>
<td>19.3</td>
</tr>
<tr>
<td>10 years or above</td>
<td>112</td>
<td>67.5</td>
</tr>
<tr>
<td>Internet Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>1 – 3 years</td>
<td>16</td>
<td>9.6</td>
</tr>
<tr>
<td>4 – 6 years</td>
<td>33</td>
<td>19.9</td>
</tr>
<tr>
<td>7 – 9 years</td>
<td>53</td>
<td>31.9</td>
</tr>
<tr>
<td>10 years or above</td>
<td>61</td>
<td>36.7</td>
</tr>
</tbody>
</table>

The Cronbach’s coefficient alpha for the four (4) constructs which comprise of sixteen (16) items are shown in Table 2. The alpha coefficients for perceived ease of use, perceived usefulness, perceived risk and behavioral intention were 0.95, 0.96, 0.96 and 0.98 respectively. This indicates that the developed scales in this research are highly reliable and acceptable. Table 2 also exhibits that the means of the perceived risk, perceive ease of use and perceived usefulness constructs are above 4.5. This could possibly indicate that even though taxpayers perceived the electronic tax-filing system as risky (i.e. PR), they still perceived the system to be easy to use and useful. In addition to that, Table 2 shows that these respondents have a positive intention to adopt the e-filing system.

A confirmatory factor analysis (CFA) using AMOS was conducted to test the measurement model. As there is no single recommended measure of fit for the structural equation model (SEM), a variety of measures are proposed by numerous literature to assess the relative fit of the data to the model (Adams et al., 1992; Segar and Grover, 1993; Subramaniam, 1994; Chin and Todd, 1995; Chau, 1997; Hu et al., 1999). They recommended the use of the Goodness-of-fit index (GFI), the Adjusted Goodness-of-fit Index (AGFI) (for sample size), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI)
and Root Mean Square Error of Approximation (RMSEA). Table 3 shows that the overall model fit is adequate. The recommended values were derived from Hoyle (1995).

As shown in table 3, the value of $\chi^2/df$ is around 2.518, which is below the desired cutoff value of 3.0 as recommended. The GFI, TLI and the CFI compare the absolute fit of a specified model to the absolute fit of the independence model. Based on Hoyle (1995), the GFI should be at or above 0.90. AGFI is a variant of GFI which adjusts GFI for degrees of freedom. The recommended value for AGFI should be at or above 0.80. As shown in Table 4, the GFI value is 0.85 which is below the recommended value. However, several studies such as Chang et al. (2005); Hu et al. (1999), Segars and Grover (1993), have GFI value which is lower than 0.80. The AGFI value for this model is just slightly lower than the recommended value which is 0.79. The CFI statistic should be at or above 0.90 and a CFI above 0.95 is considered to be an exceptional fit. Thus, in this study, the CFI value of 0.96 is not only above the recommended value but also considered to be an outstanding fit for this model. TLI is more restrictive therefore it requires a value of 0.95 or above (Hung and Bentler, 1999). In this study, TLI recorded a value of 0.95 which meets the required value. Finally, RMSEA, which measures the discrepancy per degree of freedom, should be below 0.10. This last index also supported the overall fit for the model with RMSEA value at 0.09. Overall, this model is reasonable acceptable to evaluate the results of the SEM technique.

### Table 2: Mean and scale reliability of each construct

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
<th>Mean</th>
<th>Cronbach’s α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Ease of Use</td>
<td>4</td>
<td>4.80</td>
<td>0.946</td>
</tr>
<tr>
<td>Perceived Usefulness</td>
<td>4</td>
<td>4.55</td>
<td>0.955</td>
</tr>
<tr>
<td>Perceived Risk</td>
<td>6</td>
<td>4.75</td>
<td>0.957</td>
</tr>
<tr>
<td>Behavioral Intention to Adopt</td>
<td>2</td>
<td>4.77</td>
<td>0.976</td>
</tr>
</tbody>
</table>

### Table 3: Results of the model goodness-of-fit

<table>
<thead>
<tr>
<th>Fit Index</th>
<th>Recommended Values</th>
<th>Results in this study</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2/df$</td>
<td>$\leq$ 3.00</td>
<td>2.52</td>
</tr>
<tr>
<td>Goodness-of-fit index (GFI)</td>
<td>$\geq$ 0.90</td>
<td>0.85</td>
</tr>
<tr>
<td>Adjusted goodness-of-fit index (AGFI)</td>
<td>$\geq$ 0.80</td>
<td>0.79</td>
</tr>
<tr>
<td>Comparative fit index (CFI)</td>
<td>$\geq$ 0.90</td>
<td>0.96</td>
</tr>
<tr>
<td>Tucker-Lewis index (TLI)</td>
<td>$\geq$ 0.95</td>
<td>0.95</td>
</tr>
<tr>
<td>Root mean square error of approximation (RMSEA)</td>
<td>$\leq$ 0.10</td>
<td>0.09</td>
</tr>
</tbody>
</table>

Comparison of all fit indices with their matching recommended values provided evidence of a good model fit. The next step in the model estimation was to examine the significance of each hypothesized path. The results are presented in the form of path diagrams in Figure 2. Figure 2 indicates that 61 percent of the variance in e-filing system adoption intention is explained by this model. In this model, taxpayers’ intention to adopt electronic tax-filing system was 61 percent explained by perceived usefulness ($\beta = 0.81$), perceived ease of use ($\beta = 0.38$) and perceived risk ($\beta = -0.15$) constructs. All items in perceived usefulness, perceived ease of use and perceived risk construct significantly explain the variance of the three construct toward electronic tax-filing system adoption.

Based on Figure 2, hypotheses H2 and H3 were supported as perceived ease of use (PEOU) and perceived usefulness (PU) have significant positive effects on behavioral intention. Similar to past studies, perceived usefulness (PU) is found to be a more powerful predictor of behavioral intention (BI) than perceived ease of use (PEOU). Perceived usefulness ($\beta = 0.40$) showed a slightly stronger predictor to behavioral intention than perceived ease of use ($\beta = 0.38$). H1 is also supported as perceived ease of use (PEOU) has a significant effect on perceived usefulness ($\beta = 0.81$).

Perceived risk (PR) was also a significant predictor of behavioral intention (BI) and this supports H4. This means that the risk factor will reduce taxpayers’ intention to adopt the electronic tax-filing system (Pavlou, 2003; Featherman and Fuller, 2003). The relatively weak effect of perceived risk ($\beta = -0.15$) compared to other constructs on behavioral intention (BI) suggest that perceived risk might be influenced by perceived usefulness ($\beta = -0.32$); this validates H6. This negative effect between perceived usefulness and perceived risk towards adopting a system is confirmed here and also by other studies (Pavlou, 2003; Featherman and Fuller, 2003; Featherman and Pavlou, 2003).
Figure 2: Results of the study framework

H5 was not supported, there is a negative effect of perceived ease of use on perceived risk but the path was not significant. This was also evident in the covariance results (Table 4). The results show there was no correlations between the perceived ease of use and perceived risk construct (p = 0.323). The results in Table 4 also support H1 and H6. The results showed that there is a correlation between the constructs with p = 0.000.

Table 4: Covariance results

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Casual Relationship</th>
<th>β</th>
<th>S.E</th>
<th>C.R</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>PU ←→ PEOU</td>
<td>1.528</td>
<td>0.204</td>
<td>7.484</td>
<td>0.000</td>
</tr>
<tr>
<td>H5</td>
<td>PEOU ←→ PR</td>
<td>-0.153</td>
<td>0.155</td>
<td>-0.989</td>
<td>0.323</td>
</tr>
<tr>
<td>H6</td>
<td>PU ←→ PR</td>
<td>-0.568</td>
<td>0.155</td>
<td>-3.655</td>
<td>0.000</td>
</tr>
</tbody>
</table>

β = Regression coefficient; S.E = Standard of Error of β; C.R = Critical Ratio (β/S.E); P = Statistical Significance of the Test

5. Discussion

Perceived usefulness, perceived ease of use and perceived risk were shown to be an important construct to influence taxpayer's perceptions on the electronic tax-filing system. Given the fact that the adoption of the electronic tax-filing system is voluntary in Malaysia, the findings suggest that a system that is usefulness and easy to use are important for taxpayers to voluntarily e-file their tax returns.
Thus, the government should increase its efforts to promote the usefulness and user-friendliness of the e-filing system. To increase the perceived usefulness of the system, the Malaysian government should invest in more advertising campaign that clearly denotes the usefulness of e-filing. This campaign should be strategically administered during the tax filing months. For example, advertising on billboards that are strategically located to capture a bigger audience. The system’s ease of use should also be stressed in the advertisement campaign. Besides advertisement, the Inland Revenue Board (IRB) could also improve the user-friendliness of the system by creating web-based tutorials or videos that guides the taxpayers on how to use the e-filing system. IRB could also increase its online support such as providing this service for 24 hours during the tax filing months. This is very important as most of the taxpayers will choose to e-file their returns at odd hours.

In this study, the perceived risk construct, which was defined by privacy and performance risk, was found to have a negative influence on behavioral intention. IRB needs to reduce the taxpayers’ perceived risk to encourage more taxpayers to e-file their tax returns. There are several initiatives that could lower the perceived risk of future adopters. Firstly, the IRB could increase the security features of the e-filing system. Besides a digital certificate, IRB could employ multiple firewalls, use the latest anti-virus and worm detection software, and all Internet transmissions should use SSL (Secure Sockets Layer) encrypted security measures. The embedded security features in the e-filing system need to be communicated to taxpayers so that they become aware that the e-filing system is secure. Secondly, IRB has to improve the performance of the e-filing system. If existing users perceive the system to be cumbersome and frequently malfunctions, this will deter any increase in the number of taxpayers who will e-file. Thirdly, taxpayers will e-file near the tax deadline creating a high volume of traffic, thus, IRB has to ensure that the system could cope with the traffic demand. IRB could also offer initiatives that could reduce traffic during this time by offering rebates to taxpayers that e-file their returns early. Another alternative is IRB could also outsource the e-filing service to private companies.

The findings also suggest that the perceived risk variable is important and it responds negatively towards perceived usefulness. This means that, if taxpayers perceived that the electronic tax-filing system is risky their perception on the usefulness of the system will decrease. Thus, to attract taxpayers to adopt e-filing system, IRB has to assure taxpayers that the e-filing system is safe and risk free. As indicated earlier advertising campaign is important to disseminate this information to the public. The findings also show that the relationship between perceived risk and perceived ease of use was negative but insignificant. This shows that ease of use of the electronic filing system could possibly reduce the perceived risk factor. Contrary to Featherman and Pavlou (2003), which found this relationship significant in the e-service transactions, the relationship is not significant for e-filing. A possible reason could be due to the definition of perceived risk in this study. In this study, only two of the risk facets were tested, there may be other perceived risk facets such as psychological risk that may significantly be influenced by perceived ease of use. A future study on e-filing or other e-government services could incorporate all of the perceived risk facets into the TAM model. It would also be interesting to incorporate the relationship of perceived artificiality and personal innovativeness in the model (Featherman et al., 2006). This may offer us a better understanding of the relationship between PEOU and PR in the e-government context. Future research on e-filing could also incorporate how the different forms of trust as those identified in Belanger and Carter (2008) could influence perceived risk and the adoption of the e-filing system.

As with any research, this study has several limitations. Firstly, the survey concentrates on an urban area and does not represent the whole of Malaysia. Hence, caution needs to be taken when generalizing this research to the whole of Malaysia. Secondly, the research model is based on perceived risk (PR), perceived usefulness (PU) and perceived ease of use (PEOU) constructs and this model only explains over half of the variance of the intention to use electronic tax-filing system \[ R^2 = 0.61 \]. The unexplained 39 percent of variance suggests that other constructs could be included in this model.

6. Conclusion

In summary, improving aspects of the e-filing system that would enhance taxpayers’ perceived ease of use, usefulness and reduce the riskiness of the system are essential to increase adoption of the e-filing system. Reducing the taxpayers’ perception of risk in e-filing will not only increase their perception on the usefulness of e-filing but also lead them to adopt the system. Thus, exploring further the antecedents of perceived risk will enhance our knowledge on the factors that are crucial for the adoption of e-government services.
References


Digital Reporting Practices Among Malaysian Local Authorities

Erlane Ghani and Jamaliah Said
Universiti Teknologi MARA, Malaysia
erlanekg@yahoo.com

Abstract: Using 109 Malaysian local authorities as the sample, this paper examines the type and extent of financial information disclosed digitally. This study further examines whether council size, performance and social obligation affect digital reporting. The results show that 64.2% maintain websites and out of this, 15.7% local authorities provide some disclosure on financial statements digitally. The results also show that performance and social obligation do influence the digital reporting practices among the local authorities. Further investigations reveal that lack of information technology facilities, inadequate specialised staff and lack of enforcement are among the factors deterring local authorities to disclose their financial information digitally. The results increase the body of knowledge by providing a continuous insight on the type and extent of information disclosed digitally by the Malaysian local authorities.

Keywords: digital reporting, local authorities, government, websites, Malaysia

1. Introduction

Apart from maintaining law and order, the basic role of a government is to provide education, health and basic facilities to the public. This role, however, has expanded to cover a wider scope of public’s demands. Billions of Malaysian Ringgit (MYR) have been collected in the form of taxation and other revenues and were used to inject in various projects and programs in line with the development of the country. The enormous spending of public funds has led the public to demand from the government greater transparency and accountability in their decision-making. To meet this demand, the government has to find ways to improve their reporting quality. One of the ways is the introduction of the Multimedia Super Corridor (MSC). The MSC is a project created by the government to speed up the process of the nation in becoming a developed country by the year 2020. Various investments in other related high information technology (IT) were also invested.

The government has invested in information technology (IT) in realisation of its importance towards achieving the country’s plans to become an industrialised nation by the year 2020. Under the 7th Malaysia Plan (1996-2000), about RM2.3 billion was allocated to the ministries and agencies to invest in IT-related programs and projects (Jabatan Perdana Menteri, 1995). Several states announced IT plans to complement the development of the MSC. For example, Selangor state has set up the Selangor Networking and the Web homepage for its various agencies which would link the state administration and all government departments and agencies with every business organisation, office, factory, school and home in the state. Johor state announced the establishment of Johor Information Infrastructure (JII) costing RM30 million, the first state to set up such a system in order to provide the public with a more efficient information service. Such steps would improve the quality of services in daily transactions (Cheah, 1999).

The government has also outlined digital services as one of the government’s seven flagships to improve the operations, processes and communications to the public. The local authorities that are more technologically advanced have started to offer various digital facilities to the public. Such facilities are aimed to improve the service quality of the local authorities which of consequence would provide greater convenience to the public. In year 2003, eleven out of 144 local authorities have taken a step ahead by providing online application systems, such as e-complaints, e-assessment, e-licensing, e-compound, e-submission, e-rental, e-business and e-community, in place. These 11 councils are ahead of others in terms of their leadership and revenue with some of the councils earning a gross income of RM100 million a year in comparison with the others (RM2 million). However, the numbers of local authorities not providing web-sites are still considerably high. According to the Local Government Department Director General, Datuk Mohamed Saib, a total of 41 local authorities do not have websites. If they do have websites, their websites would be of no use to the public (The Star, 8 July 2003). The unavailability of web-sites is considered inefficient (Kasim and Sani, 1997) as in today’s environment there is an increasing need for the service provider to design services according to clients’ need (Alcock, 1996). Kushairi (1997) noted that the importance for the
government to be client-focused by looking at ways to listen to clients and acquiring their feedback to improve their services.

Apart from the online services, the government has also encouraged its local authorities to provide digital reporting. Digital reporting serves as an effective communication tool as it enhances the accountability of the government (Laswad et al., 2005). However, at present, what is mandatory by the government on its local authorities is hard copy financial report which includes government policies and performance to all interest groups. Digital reporting is still voluntary. It is important, however, that the local authorities adopt digital reporting since they have a high responsibility to provide maximum interactions with the public. Further, they play the managerial role of urban environments and would be expected to have the closest relationship with the communities, namely, the stakeholders (Laswad et al., 2005). Therefore and arguably, it is also important for the local authorities to improve the quality of their reporting medium to the communities. Since studies in the digital reporting literature have provided evidence on the importance and success of disseminating financial reporting through the web, it is expected that the Malaysian local authorities (MLA) have similar practices via websites as a means of communication to the public.

This study examines the type and extent of financial information disclosed digitally by the local authorities in Malaysia. This study further examines whether size, performance and social obligation influence digital reporting. The remainder of this paper is structured as follows. The next section provides the literature review. Section 3 provides information on MLA. Section 4 presents the framework and hypotheses. Section 5 presents the research design. The results are presented in section 6. Section 7 provides the discussion and the last section concludes this paper.

2. Literature review

The web is a communication tool used as a platform to communicate to users effectively and efficiently (Xiao et al. 2002). For the preparers, digital reporting provides huge benefits which include reducing firm's information dissemination cost; communicating with unidentifiable information consumers and providing supplementary reports in addition to hard-copy (Marston and Robson, 1997; Ashbaugh et al., 1999; Trites, 1999; Bagshaw, 2000; Ettredge et al. 2001; Xiao et al. 2002; Wagenhofer, 2003). For the stakeholders, they could access corporate internal and external information in a single visit to corporate websites thereby lowering monitoring costs, reduce cognitive effort and allow interchangeable and manipulation of data for analyses purposes (Trites, 1999; Ashbaugh et al., 1999; Bagshaw, 2000; Debreceny et al., 2002; Allam and Lymer, 2003). Digital reporting has been extensively researched in the past decade (Lymer and Tallberg, 1997; Ashbaugh et al., 1999; Lymer, 1999; Bagshaw, 2000; Oyelere et al, 2003; Smith, 2003; Fisher et al., 2004; Hodge and Pronk, 2006).

The advancement of digital environment has lead to the emergence of digital reporting literature. Digital reporting has been extensively researched in the past decade focusing on both preparers and users of financial reports (such as Lymer and Tallberg, 1997; Ashbaugh et al., 1999; Lymer, 1999; Anderson, 2000; Oyelere et al., 2003; Smith, 2003; Fisher et al., 2004; Hodge and Pronk, 2006). This literature identifies a number of issues including the important factors that lead organisations to adopt digital reporting (Ashbaugh et al., 1999; Craven and Marston, 1999; Deller et al., 1999; Anderson, 2000; Allam and Lymer, 2003; Oyelere et al., 2003; Laswad et al., 2005), and the extent of information provided via the web (Allam and Lymer, 2003; Smith, 2003; Fisher et al., 2004). Most of the studies focused on the private sectors.

The link between digital reporting and public sectors has also been examined although the numbers are limited (such as Said et al., 2001; Laswad et al., 2005). These studies examined the number of public sector bodies that practice digital reporting and the factors that lead public sectors to practice digital reporting. Said et al. (2001) examined the number of local authorities that practice digital reporting. They found that only a small percentage of the local authorities practice digital reporting. The results of their study are mainly descriptive describing the numbers of government bodies practicing digital reporting.

Other studies that examined the link between digital reporting and public sectors are mostly conducted in the developed countries. For example; Laswad et al. (2005) examined the factors that may lead the New Zealand government bodies to adopt digital reporting. Six variables associated with voluntary disclosure are examined: political competition, size, leverage, Municipal wealth, press
visibility, and type of local authority. Their results indicate that leverage, Municipal wealth, press visibility, and type of council are associated with the digital financial reporting practices of local authorities in New Zealand. However, Laswad et al.’s study is conducted in the context of a developed county, New Zealand. This issue has yet to be thoroughly examined in a developing country such as Malaysia. The results of such study in the context of developed countries may not be similar to those in the developing countries. The lack of such study motivates this study to examine this issue. The results of this study would increase the body of knowledge by providing a continuous insight on the type and extent of information disclosed digitally by the MLA.

3. Malaysian Local Authorities (MLA)

The Malaysian government is being structured into three-tier government: federal, state government and local authorities. In general, the Malaysian Local Authorities (MLA) are under the jurisdiction of the state governments. The president known as the Yang Di-Pertua headed the MLA.

In total, there are 144 local authorities in Malaysia. The MLA consists of 9 City Councils, 34 Municipal Councils and 101 District Councils. MLAs have the power to collect taxes and to create laws and rules as well as granting licenses and permits for any trade in their areas (Said et al., 2001). MLAs also has the responsibility to safeguard public health and sanitation and management, environmental protection and building control, social and economic development and general maintenance functions of urban infrastructure within its jurisdiction (Said et al., 2001).

The executive powers lie with the mayors in city councils, and presidents in municipal and district councils. The state governments, elected every five years, appoint mayors, presidents and all councillors. These appointments are for three-year renewable terms. The council decision-making process is through a committee structure determined by the local authority.

Under the MLA, there are 3 types of organisations. There are City, Municipal, and District council. All these organisations perform the same functions. The functions can be divided into two. The first function is the provision of basic services which covers the maintenance of local community and this includes businesses. The second function relates to the regulating the use of land use and business activity within the administrative area (Hazman, 2006).

A city council refers to a local authority if the population exceeds 500,000 people and the collection of the annual revenue is more than RM100 million. City councils are led by mayors. A local authority is known as the municipal council if the population is not less than 150,000 and the annual revenue collection is more than RM20m. A municipal council is led by a president. On the other hand, a local authority is known as a district council if the population is less than 150,000 and the collection of annual revenue is less than RM20m (Hazman, 2006). A district council is also led by a president.

In summary, being the government’s lowest tier, MLAs have a high responsibility to provide maximum interactions and communication with the public. MLAs are the managers of urban environments and therefore, are expected to have the closest relationship with the communities, namely, the stakeholders. Hence, it is important for MLAs to continuously improve their reporting quality to the stakeholders.

4. Framework and hypotheses

4.1 Framework

This section presents the framework of this study. The framework is based on Laswad et al. (2005) with few modifications. This study limits its factors to only three variables: size, performance and social obligation. Political competition and press visibility are excluded in this study due to the difference in the mayor selection procedure. In Malaysia, the mayors are often elected by the Ministry whereas in New Zealand, mayors are often elected by the public. As such, most local authorities do not emphasise the importance of press visibility in Malaysia. Figure 1 illustrates the framework that underpins this study. The framework suggests 3 factors (council size, performance and social obligation) that may influence local authorities to practice digital reporting.

Studies in the digital reporting literature have examined the effect of size on firm’s decision to practice digital reporting (Petravick and Gillet, 1996; Lymer and Tallberg, 1997; Marston and Leow, 1998). The results of these studies show that firm’s size does influence a firm to practice digital reporting. Larger
firms with greater shareholder dispersal were found to be more likely to have corporate websites and to disclose financial information (Marston and Leow, 1998; Ashbaugh et al. 1999, Craven and Marston, 1999; Pirchegger and Wagenhofer, 1999). It is likely that similar results would appear in the public sector. Therefore, size of a local authority is the first independent variable.

Studies examining the factors influencing private firms to disseminate financial information voluntarily have argued that managers are more forthcoming with information when the firm is performing well than when it is performing poorly (Lang and Lundholm, 1993). However, whether this factor could influence the public sector to practice a technology such as the digital reporting has yet to be thoroughly examined. Therefore, the performance is the second independent variable.

![Research framework](https://example.com/figure1.png)

**Figure 1:** Research framework

Laswad et al. (2005) have examined whether social obligation could influence public sector to practice digital reporting. They used the amount of expenditure spent for development as proxy to reflect the level of social obligation by the local authorities. Their study was conducted in a developed country, New Zealand. This study used this variable to represent the third independent variable in the context of a developing country, Malaysia.

Digital reporting practice is the dependent variable. Previous studies such as Said et al. (2001) showed some evidence that the local authorities in Malaysia do practice digital reporting. However, their study is limited to descriptive nature showing the numbers of public sectors that practice digital reporting. Their study did not include examining the possible factors that may influence local authorities to adopt digital reporting.

### 4.2 Hypotheses

This section develops the hypotheses relating to the factors that may affect Malaysian local authorities’ to disclose financial information via the web. Three hypotheses are developed representing 3 variables, namely, council size, performance and social obligation. The hypotheses are discussed in the following sections:

**4.2.1 Council size**

Due to higher agency costs, larger firms have higher information asymmetry between managers and shareholders. They tend to disclose more information compared to smaller firms in order to reduce these costs (Firth, 1979; Chow and Wong-Boren, 1987; Debreceny and Gray, 2001). Similarly, Pirchegger and Wagenhofer (1999) argues that dissemination via the web is likely to be largely related to council size as it is likely to be a cost effective means of satisfying the political manager’s voluntary disclosure incentives for information production. Barber (1983) argues that the number and magnitude of wealth transfers administered by political agents may increase competition for public office. Increasing political competition makes it more costly for incumbent political agents to ignore pre-election agreement with supporting voters (or interest group), so political agents have an incentive to bear greater monitoring costs by supplying more information with demonstrate their execution of pre-election promises. As a consequence, the benefits of disclosure over the web are likely to be increasing with size. Therefore, the first hypothesis is;
H1: There is a positive association between council size and digital financial reporting.

4.2.2 Performance

Christiaens (1991) argued that ‘Municipal wealth’ should be positively associated with increase in disclosure because it provides a signal of management quality. Christiaens used ‘own revenue per capita’ as a proxy for ‘Municipal wealth’. Poorer performing firms may avoid using voluntary disclosure techniques, such as digital reporting, preferring instead to restrict access to accounting information to more determined users (Lang and Lundholm, 1993; Craven and Marston, 1999). Hence:

H2: There is a positive association between local authorities’ performance and the digital financial reporting

4.2.3 Social obligation

Laswad et al. (2005) have used the amount of expenditure spent for development as proxy to the level of social obligation by local authorities. This study is also interested to examine whether social obligation affect the method of disclosure of financial information. The web is a cost effective tool for disseminating such information simultaneously to many individuals over large geographical distances (Bagshaw, 2000; Debreceny et al., 2002). Hence,

H3: There is a positive association between local authorities’ social obligation and digital financial reporting

5. Research design

5.1 Research objectives

This study focuses on digital reporting practices of the Malaysian local authorities. Specifically, this study aims to examine:

- The type and extent of financial information disclosed digitally.
- The factors that influence digital reporting practices among the local authorities.
- The reasons for those local authorities not practicing digital reporting.

This study aims to achieve these objectives by way of content analysis and interviews.

5.2 Sample

A list of local authorities in Malaysia and their website addresses were identified through the webpage of the Ministry of Housing and Local Government (MHLG). There are 144 local authorities in Malaysia. Local authorities whose addresses were not available on this websites were contacted via telephone to obtain their website addresses, if any. Based on the availability of financial data, 109 Local authorities were chosen as the study sample of which 7 are City councils, 17 are Municipal councils, and 85 are District councils. For the purpose of this study, the Federal Territories’ councils were included and treated as City councils due to their similarity in terms of size and function. The remaining 35 local authorities’ financial data were not able to be collected despite various phone calls and emails. These local authorities were therefore excluded from this study.

5.3 Data collection

The data collection was done through reviewing the availability of any financial and non-financial information disclosed digitally. The search of the financial and non-financial information is based on Said et al. (2001). In the context of this study, financial information refers to any information related to financial reports, financial highlights, and annual monetary plans. Those authorities with financial information on their websites are categorized as ‘Digital reporting authorities’ or those without financial information are categorised as ‘Non-Digital reporting authorities’.

The financial information content was divided into 4 categories: annual report only, financial highlights only, annual plan only and a combination of the items mentioned earlier. The non-financial content of the websites were reviewed and the items disclosed were systematically placed into 17 categories based on the study. The 17 categories include: (1) Introduction, profile, background and history; (2) Services, facilities and function; (3) Mission, vision and objective; (4) Organization chart; (5)
Complains, feedback and suggestion; (6) Mascot, logo, official flower and flag; (7) YDP and mayor statements; (8) Event calendar and planning; (9) Others; (10) Laws, enforcement and procedure; (11) Tourism information and interesting places; (12) Tender and licences information; (13) Quality programs; (14) Administrative, personnel, management and board of directors; (15) Accomplishment and current development project; (16) Information technology and initiative information and (17) Industrial opportunities and incentives.

The identification of the items in this study was conducted by the researchers by browsing through the websites of the sample chosen. Each item was analysed to determine the suitability of the item in respective categories. In cases where the term of an item was not specifically stated under the 17 categories, one of the researchers attempted to best match the item into the most related category. The second researcher then verified the item to determine the suitability of the item in the respective categories.

Short interview sessions were also conducted to determine the reasons why certain local authorities chose not to practice digital reporting. The interviews were conducted with the representatives of the local authorities. Local authorities whom financial information was not available in their websites in Peninsular Malaysia at the time this study was conducted were divided into four zones (North, South, East and West). Local authorities of Sabah and Sarawak are not included due to cost constraints. One council from each zone was identified using ‘snowballing effect’ and were contacted via telephone. A total of 4 unstructured interviews were conducted with 2 representatives of 2 local councils of the Northern region and the Southern region. Such purpose is to allow the interviewees to freely provide their opinions on why their organisations practice digital reporting.

6. Results

6.1 Descriptive statistics

Table 1 presents the descriptive statistics. Table 1 shows that out of 109 samples taken for this study, 70 (64.2%) of the local authorities maintain websites and 39 (35.8%) Local authorities do not. These 39 local authorities are either without website or with incomplete websites. Table 1 also shows that 8 (80.0%) out of 10 City councils maintain websites and 15 (68.2%) out of 22 Municipal councils operate websites. Whilst at the District council level, 47 (60.2%) of the 78 councils do so.

Table 1: Local authorities’ maintenance of websites

<table>
<thead>
<tr>
<th>Type of Local authorities</th>
<th>With website</th>
<th>Without website</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freq</td>
<td>% within sector</td>
<td>Freq</td>
</tr>
<tr>
<td>City council</td>
<td>8</td>
<td>77.7</td>
<td>2</td>
</tr>
<tr>
<td>Municipal council</td>
<td>15</td>
<td>68.2</td>
<td>7</td>
</tr>
<tr>
<td>District council</td>
<td>47</td>
<td>60.2</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>64.2</td>
<td>39</td>
</tr>
</tbody>
</table>

Table 2 presents the results that show that the most frequently disclosed non-financial attributes are background, Introduction, profile and history of the local authorities. 54.6% of the 109 local authorities disclosed these attributes. This is followed by Services/Facilities and function (51.1%), Mission, Vision and Objective (41.7%), Organisation Chart (38.8%) and Complains, Feedback and Suggestion (35.2%). The least information disclosed is Industrial opportunities and incentives (0.7%).

Table 3 presents the results that show the number of local authorities that practice digital financial reporting. As can be seen from Table 3, only 11 out of 70 local authorities (15.7%) can be categorized as local authorities with digital reporting i.e. they have some financial information available on their websites. Majority of the District and Municipal councils (97.9% and 60%, respectively) are local authorities without digital reporting. The majority of the City councils are practicing digital financial reporting.

Interviews were carried out to get in-depth information on the reasons why a majority of the local authorities did not disclose financial information in their websites. Among the reasons given are the lack of specialise staff, policy constraints, lack of facilities and lack of awareness of the importance of digital reporting.
Table 2: Non-financial attributes disclosed in the Local Authorities’ websites

<table>
<thead>
<tr>
<th>Non financial information</th>
<th>Freq.</th>
<th>%</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction, Profile, Background, History.</td>
<td>76</td>
<td>54.6</td>
<td>1</td>
</tr>
<tr>
<td>Services, Facilities, Function.</td>
<td>71</td>
<td>51.1</td>
<td>2</td>
</tr>
<tr>
<td>Mission, Vision, Objective.</td>
<td>56</td>
<td>41.7</td>
<td>3</td>
</tr>
<tr>
<td>Organisation Chart.</td>
<td>54</td>
<td>38.8</td>
<td>4</td>
</tr>
<tr>
<td>Complaints, Feedback, Suggestion.</td>
<td>49</td>
<td>35.2</td>
<td>5</td>
</tr>
<tr>
<td>Mascot, Logo, Official Flower, Flag.</td>
<td>47</td>
<td>33.8</td>
<td>6</td>
</tr>
<tr>
<td>YDP Statement, Mayor statement.</td>
<td>43</td>
<td>30.9</td>
<td>7</td>
</tr>
<tr>
<td>Event calendar, Planning.</td>
<td>41</td>
<td>29.5</td>
<td>8</td>
</tr>
<tr>
<td>Others</td>
<td>34</td>
<td>24.5</td>
<td>9</td>
</tr>
<tr>
<td>Laws, requirement and Procedure.</td>
<td>33</td>
<td>23.7</td>
<td>10</td>
</tr>
<tr>
<td>Tourism information, Interesting Places.</td>
<td>33</td>
<td>23.7</td>
<td>11</td>
</tr>
<tr>
<td>Tender and Licenses Information.</td>
<td>26</td>
<td>18.7</td>
<td>12</td>
</tr>
<tr>
<td>Quality Programs</td>
<td>25</td>
<td>18</td>
<td>13</td>
</tr>
<tr>
<td>Administrative, Personnel, Management, Board of Directors.</td>
<td>21</td>
<td>15.1</td>
<td>14</td>
</tr>
<tr>
<td>Accomplishment, Current Development Project.</td>
<td>21</td>
<td>15.1</td>
<td>15</td>
</tr>
<tr>
<td>Information Technology initiative information</td>
<td>9</td>
<td>6.4</td>
<td>16</td>
</tr>
<tr>
<td>Industrial opportunities and incentives.</td>
<td>1</td>
<td>0.7</td>
<td>17</td>
</tr>
</tbody>
</table>

Table 3: Local authorities with digital financial reporting

<table>
<thead>
<tr>
<th>Type of Local authorities</th>
<th>Digital reporting</th>
<th>Non digital reporting</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freq</td>
<td>% within sector</td>
<td>Freq</td>
</tr>
<tr>
<td>City council</td>
<td>4</td>
<td>66.7</td>
<td>4</td>
</tr>
<tr>
<td>Municipal council</td>
<td>6</td>
<td>40</td>
<td>9</td>
</tr>
<tr>
<td>District council</td>
<td>1</td>
<td>2.1</td>
<td>46</td>
</tr>
</tbody>
</table>

Table 4: Financial information disclosed by Local authorities with digital reporting

<table>
<thead>
<tr>
<th>Type of Local authorities</th>
<th>City Council</th>
<th>Municipal Council</th>
<th>District Council</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freq</td>
<td>% within sector</td>
<td>Freq</td>
<td>% within sector</td>
</tr>
<tr>
<td>Annual report only</td>
<td>2</td>
<td>50</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>Financial highlight only</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>Annual plan only</td>
<td>2</td>
<td>50</td>
<td>1</td>
<td>17</td>
</tr>
</tbody>
</table>

The financial information of the 11 local authorities with digital reporting was analysed further to determine the types of information disclosed. Table 4 presents the results. 50% of the Municipal councils provide annual report only. For the City councils, 50% provide only annual report while the 50% provide only their annual plan. The sole District council with digital reporting shows only its annual plan. Overall, the popular types of information disclosed are provision of annual report only (46%) or annual plan only (36%).

6.2 Determinants of digital reporting practices

This section presents the results of the hypotheses developed in this study. The Binary logistic regression analysis was used to test the hypotheses. The purpose of this analysis is to determine the effect of the variables chosen in this study on the categorical variable that is the presence or absence of digital reporting practices.
6.2.1 Council size

The first hypothesis is to test whether there is a positive association between council size and digital financial reporting. The type of local authorities was used to represent council size. Table 5 presents the results. The results show the contribution of the factor: Council size as measured by type in local authorities' decision to practice digital financial reporting. The results show a p-value of 0.412, indicating that there is no sufficient evidence to support the hypothesis that council size influences the adoption of digital financial reporting. Therefore, hypothesis 1 is rejected.

Table 5: The influence of council size on digital reporting practices

<table>
<thead>
<tr>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower</td>
<td>Upper</td>
<td>Lower</td>
<td>Upper</td>
<td>Lower</td>
</tr>
<tr>
<td>Step 1(a)</td>
<td>Type(1)</td>
<td>0.667</td>
<td>0.813</td>
<td>0.673</td>
<td>1</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.674</td>
<td>0.731</td>
<td>13.379</td>
<td>1</td>
<td>0.000</td>
</tr>
</tbody>
</table>

6.2.2 Performance

The second hypothesis is to test whether there is a positive association between local authorities' performance and digital financial reporting. Revenue collection of the local authorities was used to represent performance. Table 6 presents the results on whether performance of the local authorities influences their adoption of digital financial reporting. The results show a p-value of 0.000 indicating that there is a positive association between performance of local authorities and digital financial reporting. Therefore, hypothesis 2 accepted.

Table 6: The influence of performance on digital reporting practices

<table>
<thead>
<tr>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower</td>
<td>Upper</td>
<td>Lower</td>
<td>Upper</td>
<td>Lower</td>
</tr>
<tr>
<td>Step 1(a)</td>
<td>Revenue</td>
<td>0.000</td>
<td>0.000</td>
<td>14.880</td>
<td>1</td>
</tr>
<tr>
<td>Constant</td>
<td>-3.419</td>
<td>0.553</td>
<td>38.247</td>
<td>1</td>
<td>0.000</td>
</tr>
</tbody>
</table>

6.2.3 Social obligation

Table 7 presents the results of testing hypothesis 3. The third hypothesis is to test whether there is a positive association between local authorities’ social obligation and digital financial reporting. The expenditure spent by local authorities for development was used to represent social obligation. The results show that there is a positive association between social obligation and digital reporting practices (p=0.00) at 5% level of significance. Therefore, hypothesis 3 is accepted.

Table 7: The influence of social obligation on digital reporting practices

<table>
<thead>
<tr>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower</td>
<td>Upper</td>
<td>Lower</td>
<td>Upper</td>
<td>Lower</td>
</tr>
<tr>
<td>Step 1(a)</td>
<td>Expenses</td>
<td>0.000</td>
<td>0.000</td>
<td>17.556</td>
<td>1</td>
</tr>
<tr>
<td>Constant</td>
<td>-3.784</td>
<td>0.632</td>
<td>35.898</td>
<td>1</td>
<td>0.000</td>
</tr>
</tbody>
</table>

7. Discussion

This study examines the type and extent of financial information disclosed via the web. This study further examines whether council size, performance and social obligation affect digital reporting. This study provides evidence that the factors: performance and social obligation do influence the decision of local authorities to provide financial information digital. However, the results show that council size as measured by the types of local authorities does not influence their decision to practice digital reporting. This study examines the extent of financial information disclosure in the websites of the local authorities. This study also examines the factors that affect digital reporting in the local authorities. The results show that more than half of the Local authorities practicing digital reporting. This finding shows a positive increase in comparison to Said et al. (2001) in which they reported that only 32.6% out of 120 local authorities maintained websites. This might be due to initiatives taken by the MHLG via the launching of the Smart Local Government- Government Agenda (SLGGA) program.
The results also show that more of City and Municipal councils practice digital reporting compared to District councils. One possible reason could be that since City and Municipal councils cover a much larger geographical area, the use of Web would be potentially more beneficial for them, especially where it enhances community access to local authority information. The prevalence of website ownership among City councils may symbolise the ‘urban factor’ in Web usage. Such argument is consistent to Ettredge et al. (2001). Interestingly the item ‘Complains, Feedback, Suggestion’ shown in Table 2 is ranked fifth in this study. In the earlier study by Said et al. (2001) it was ranked 9th. The increase in the percentage of local authorities having this item in their websites may be due to the launching of Smart Local Government- Government Agenda (SLGGA) program in which requires this item to be available in each of the local authorities’ websites.

The results, however, show that there is a no association between council size and digital financial reporting. In other words, the bigger the size of the authorities, the more likely they will disclose financial information in the websites. This finding is similar to previous studies examining factors influencing digital reporting among firms in the private sectors (Hossain et al., 1995; Debreceny, 2002; and Allam and Lymer, 2003). Similar results also appeared in Laswad et al. (2005). The result is also consistent with the findings of previous studies that performance affects firms’ decision to practice digital reporting (Baber, 1983; Christiaens, 1991 and Oyelere et al., 2000). In other words, the higher the revenue collection, the more likely the local authorities are to use the web to disseminate financial information. The result supports the notion of greater scale-related benefits with disclosure on the Web, given the decreasing costs of information production and dissemination (Pirchegger and Wagenhofer, 1999; Debreceny et al., 2002).

Finally, the results show that there is an association between social obligation and digital reporting. In this study, social obligation is seen as the total expenditure spent by the local authorities for development purposes. The results indicate that local authorities with bigger amount spent on development expenses tend to disseminate financial information via their websites as compared to their counterpart that spent lesser amount on development expenditure.

This study also examines the reasons why certain local authorities are reluctant to practice digital reporting. One of the reasons given by the officers in the local authorities for not disclosing financial information on the websites is the lack of specialise staff employed to maintain the websites. Qualified staff should be employed to be responsible for the websites. Staff training on information technology would be beneficial to the improvement of digital reporting. Another reason given is the absence of policy requirement from the higher authorities (such as Ministry of Housing and local government) or the top management of the local authorities to continuously update the websites and disclosed their annual accounts. Therefore, this study indicates the need for the Ministry of Housing and Local Government to impose a policy for all local authorities in Malaysia to have a website. Other reasons given are the lack of facilities (such as Web-ready computers and staff with IT knowledge to updating the website) and lack of awareness among the staff on the information available in their websites as well as websites of other local authorities. For that matter, they feel that whatever information in their websites is already adequate. In addition, they also believe that not many people would want to browse through their websites looking for financial information.

The findings in this study provide some indication on the accountability level among the local authorities in Malaysia. Although the results showing only a small number of local authorities disclose some financial information digitally, this is acceptable considering the fact that Malaysia is a developing country which has to aim to achieve the status of a developed country in year 2020. The move of the local authorities in providing digital reporting is an indication that they are becoming more accountable to the public (Laswad et al., 2005).

8. Conclusion

The findings in this study implicate the need for each council to be allocated with sufficient funds to continually upgrade their IT facilities. Indeed, the government’s decision in launching SLGGA is a good move to ensure that the local authorities could provide a better service to the public. However, disclosing financial information is not part of the items requires to be made available in the websites. It is recommended in this study to SLGGA to be reviewed to include financial reports. The availability of these reports would enhance the transparency and accountability of the councils. That is, the picture of the large expenditure incurred by the local authorities could be made transparent since a large
amount of the collections are collected from the public. Therefore, these local authorities deemed necessary to be more accountable to the public.

This study has few limitations. This research only looks at the impact of size, performance and social obligation on IFR. Future research may also include other variables such as population, debt and federal aid. The findings of these studies would assist in determining all the factors that would have an impact on Web financial reporting by the Malaysian local authorities. The information would be useful to the State and Federal government in their planning for future investment in IT.

Secondly, the results of this study are limited to a specific developing country, Malaysia. A comparison study could be made in examining the adoption of digital reporting among local authorities in Malaysia with that of neighbouring countries. This would provide an indicator of the level of sophistication of our authorities' websites as compared to our neighbours. Finally, the data of this study is limited to a certain period. It is expected that information technology becomes more sophisticated over time and the government is continuously striving to reduce the digital divide in the country.

In summary, this study provides some evidence that performance and social obligations are important determinants of digital reporting among the local authorities. Future research could be conducted to include other government agencies such as the state government agencies as well as federal government agencies. Future research could also include other variables such as social economic factor of the community which were not examined in this study.

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EU Legitimacy and new Forms of Citizen Engagement

Andrew Power
Queens University, Belfast, Northern Ireland
Institute of Art, Design and Technology, Dublin, Ireland
andrew.power@iadt.ie

Abstract: The purpose of this paper is to review the arguments and examine the case for the legitimacy of the European Union (EU) and its institutions. In terms of the scope of the paper the author sought to, examine the literature in this area, engage with current issues, and speak with practitioners. This paper was written in the months leading up to the 2009 elections to the European Parliament. A number of interviews were done including two Irish members of the European Parliament (MEPs) who were standing for re-election at the time. This was done to ground some of the ideas brought forward by the literature in the experience of those most directly involved. The paper goes on to look at some of the approaches to democratising the EU such as the way in which the EU has used information and communication technologies (ICT) to connect with the citizens of Europe. The author concludes that, while the EU does not conform to ideal models of legitimacy and accountability, it is evolving in that direction and a case can be made that the EU is at least as accountable as the nation states of which it is composed. It is also the view of the author that developments in social networking and virtual environments, offer states and politicians the opportunity to better engage with citizens and contribute to the speed of this evolution.

Keywords: e-government, e-consultation, European Union, democratic deficit, legitimacy, cyberparliament

1. Introduction

Political power has been defined by Beetham (1998) as legitimate if three conditions are met. Firstly, that power is acquired and exercised according to established rules. Secondly, that the rules are justifiable according to accepted beliefs about the source of authority and standards of government. Thirdly, that the positions of authority are confirmed by the consent of those subordinate to them and recognised by other legitimate authorities. The legality of the Union is not in question, nor the recognition of the Union. Rather it is the degree to which the European Union (EU) meets the standard of legitimacy in terms of the justifiability of the system of governance in relation to accepted norms, and the degree to which it meets normative standards of governance. The accepted norms of governance leads us to another contestable concept, that of accountability. Bovens (2007), claims that accountability is dependent on an actor, a forum for judgement, and an obligation to explain those actions to the forum. This refinement provides a framework by which to judge the institutions of the EU. Does the EU meet normative standards of governance and can therefore be considered legitimate and do the institutions meet the criteria of actor, forum and reporting to meet the criteria of accountability?

The role that technology can play in addressing any perceived legitimacy deficit or lack of accountability will be explored at the conclusion of this paper. The internet has made information more accessible to citizens, allowed greater monitoring of governmental organisations and provided the possibility of greater interaction. Pina et al (2007) conducted an empirical study of the impact of information and communication technologies (ICT) on the national governments of the USA, Canada, Australia, New Zealand and fifteen EU countries. They found the use of ICT in consultation, policy making and deliberative democratic input, beginning to be embraced and the possibility of bringing citizens closer to their governments discernable in the near future. The degree to which ICT offers the various actors of the EU a forum for judgement and an opportunity to explain their actions will be examined later.

2. The legitimacy arguments

Montesquieu, writing in the 18th century saw legitimacy based on the will of the people, the laws of each nation 'should be so proper to the people for whom they are made, that it is only by great chance that those of one nation should be appropriate for another” (Montesquieu 1961:128). This concern that a single set of laws and the lack of homogeneity of the European people is echoed by Moravcsik writing 200 years later. Moravcsik (2002) cites the size of the EU, its distance from the individual citizen and the lack of a common history, culture, or symbolism as a reason for concern. At an institutional level the fact that only one portion of the polity is elected directly and that European elections are not fought on European issues or transnational politics is seen as a further impediment.
The lack of knowledge of the role of the Commission, the growing influence of the European Court of Justice, and the fact that deliberation in the council of ministers is seen as secretive and diplomatic in nature; all contribute to an EU viewed with suspicion by many citizens.

Despite this, Moravcsik argues for the legitimacy and democratic strength of the EU. The EU should not be held to a standard of democracy that does not exist in nation states, most of whom have delegated functions from elected representatives to qangos. For example in Ireland there has been a process of agencification which has occurred in the last twenty five years which has seen the number of state agencies grow by more than four hundred. State agencies remain part of the system of government and the government is ultimately responsible for their performance (Dooney & O'Toole 1998: 189). However they have been defined as ‘autonomous public bodies, neither temporary in character nor purely advisory in their functions’ (FitzGerald 1963:5). Schmitter (1985:33) claims that ‘the modern state is an amorphous complex of agencies with ill defined boundaries performing a great variety of not very distinctive functions.’ The role of agencies in Ireland is well discussed in Orlaigh Quinn’s (2008) book on the subject. If such movements of power and authority from elected representatives raise no concerns of democratic deficit at a national level then it is difficult to sustain the argument that similar delegation of decision making at a European level produces an unacceptable deficit. According to the Member of the European Parliament (MEP) Gay Mitchell, who the author interviewed in March 2009 in the course of preparing this paper:

“......the real democratic deficit is between the Dáil and the people not between the European institutions and the people...there is nothing more accessible than the way we do our business in terms of draft directives, directives that are issued, proposals for directives, how they are debated, how they can be accessed by anyone. But in the Dáil they have given away their powers to tribunals, to fora, to commissions to all sorts of people, and they are only left with responsibility and that is wrong.”

The EU retains strong constitutional checks and balances and there is strong, if indirect, democratic control by the nation states. The directly elected European Parliament (EP) is growing in influence and the process of policy making is clear and transparent. The process of enlargement has further promoted democracy by strengthening the moderate centrist parties in the eastern states, thus raising the standard of democracy across Europe. Finally, the regulatory nature of much of the work of the EU may be less interesting to citizens but this does not mean the EU is negatively impacting on debates in the member states. In fact, those who focus on the regulatory model of the EU (Majone 1996) would argue that legitimacy results from outputs and not from the process of achieving the outputs.

Follesdal and Hix (2006) rejected the view that legitimacy is achieved simply if a positive outcome is produced, there must be a link between voter preference and policy outcome. They argue that checks and balance processes are just another version of veto politics which allows single issue groups to block decisions which might benefit the majority. A weakness in the ‘democracy’ of European Parliament is seen as the lack of an opposition, elections are based not on opposing visions or policies, but on local personalities or issues.

Bovens (2007) describes traditional accountability, where citizens delegate to elected representatives, who in turn delegate to a cabinet of ministers, as vertical accountability. In contrast horizontal accountability as the access citizens have to power via civil forums, clients, administrative forums, ombudsmen, and auditors. Looked at in this way accountability in the EU is ‘diagonal’ in nature with elements of each system present in its structures.

The argument for a democratic deficit is based on two propositions; a lack of democratic control mechanisms and a general lack of popular support. The problem with approaching legitimacy in this way is that it seeks to impose traditional models of nation-state legitimacy on a transnational institutional structure (Burgess 2002:468). Riekmann’s view (2007) is that the EU does not have a system of government but a system of governance and so comparisons with national governments are not useful. Also, ‘the legitimacy of the EU is primarily indirect and mediated through national governments that have pooled their sovereignties in order to do collectively what they could not do equally well individually’ (Shackleton and Raunio 2003).
At a meeting in IBEC on the 26th of February 2009, Vice President Gunter Verheugen, Commissioner for Enterprise and Industry, speaking about navigating a path through the difficult economic times said:

“Europe should not act in a single or harmonized way, each member must select the best course of action for their circumstances, but Europe must take action in a co-ordinated way so that no harm is caused by the actions of one member to another. In this way it is more important that there is agreement on what not to do and that there is a process to agree these positions”

This contemporary interpretation of democracy sees legitimacy based on the correct execution of a set of valid procedures (Burgess 2002:472).

For Weber (1972), there are three logics of legitimacy; rational authority based on the legitimacy of the law, traditional authority based on tradition, and charismatic authority based on the legitimacy of an individual leader. In the case of the EU there is no single leader, nor is there sufficient common history yet to the EU as an institution. This leaves us with the legitimacy of, and respect for, the law and by extension the institutions established by the law. The EU's legal authority is based wholly on the circulation of directives, rules and regulations. It is the institutions function to apply those rules and regulations (Burgess 2002:474). For that reason the following section looks at the question of legitimacy in the EU institutions.

3. The accountability of EU institutions

The development of the EU can be mapped out via the series of treaties which established and developed the polity. At each stage the final outcome or destination of the process has been fudged by the member states (Mazey 2001) but the progress toward a more integrated and accountable organisation is consistent.

The three main institutions of the EU have been compared to various national institutions but comparisons are difficult given their uniqueness in the international political landscape. In an interview for this paper in March 2009, MEP for Dublin, Gay Mitchell, likened the European Parliament to the House of Representatives in the US whilst explaining the difficulty in making comparisons with other fora.

“...the Parliament is more like a house of representatives than the Dáil. [N.B. The Dáil is the lower house of the Irish Parliament] The difficulty we have is that there is no term for this in political science so people start using old terms for this which do not fit........we didn’t have a blank page on which to write a constitution so by instalments we are agreeing how we will live on this continent together in peace and stability, how we will organise ourselves to live within the continent then as a continent how we will organise ourselves to play a role in the world. ........we are doing that by sort of push and pull we are moving ahead and we are bringing people with us at the same time. I just think the whole thing is a fascinating part of our living history, that this is happening and its happening in a democratic way”

The Council of ministers represents the governments, the European Parliament represents the people, and the Commission represents Europe. This view is supported by the nature of the appointment of the bodies. The Council are appointed by national governments, the European Parliament by direct election by European citizens, and the Commission by agreement between the other two. An alternate view would be that the Council represents the interests of the member states and the Parliament and Commission represent the centralised power of Europe. This sees the national governments as players in a political game of compromise between national interests and the politics of ‘Brussels’. This is a scenario that often plays well with a governments electorate who see their politicians seeking to get what is best for them from ‘Brussels’.

Rather than attempting to compare these three European institutions to national institutions it may be useful to look at them in turn and examine the nature of their accountability.

4. Commission

The role of the Commission has no direct comparison at national level. In some ways it acts as a bureaucracy or civil service, in other ways it can appear to have executive functions. The Commission is divided in to twenty seven directorates each responsible for a different policy area and each headed
by a commissioner nominated from a member state. The role of the Commission is to initiate policies, represent the EU, act as guardian of the treaties, ensure the correct application of EU legislation and negotiate international trade agreements.

The power of the Commission rests on its ability to set an agenda. The legitimacy of the Commission rests on a number of arguments. The Commissioners are proposed by the democratically elected governments of their country and approved by the democratically elected European Parliament. Though they are not directly elected to office they retain close links to citizens through civil society organisations, interest groups, trade unions and other lobbying organisations. Saurugger (2008) has analysed the value of interest groups to the development of democracy in the EU. In her view they are of great value in providing citizen initiated policies, providing law makers with information not otherwise available, improving the efficiency of policy making, and assuring citizen involvement. The point is also made that whilst the EU may not have evolved to a government by the people and of the people, it is certainly government for the people and with the people. The participation of interest groups increases both the bargaining power and legitimacy of the Commission. Finally, the Commission is a proposer of policy; all proposals are subject to approval by parliament and/or the council. It is these two institutions, with a more direct electoral mandate, who provide the decision making fora for the EU.

5. European Parliament

The European Parliament is directly elected every five years by the citizens of the member states. Meetings of the parliament take place in Strasbourg and Brussels with a secretariat in Luxembourg and Brussels. Some twenty committees do preparatory work in preparation for these plenary sessions. The parliament has 785 seats, grouped by common political outlook rather than by nationality.

The power of the Parliament can be categorised as, scrutiny and control, legislative and budgetary. In regard to the first of these, the Parliament can ask questions of both the Commission and the Council of Ministers, can establish committees of enquiry, and plays a role in the appointment of commissioners who must be approved by the Parliament before appointment. In extremis, the entire team of commissioners can be removed by the Parliament, and although this has never happened, it has come close on one occasion where the commissioners chose to resign rather than receive this censure. The Parliament and the Council share legislative powers through a number of procedures discussed below and the power of the Parliament has grown as a result of successive treaties. Despite this it does not have the same power as national parliaments (Nugent 2006:280). It is excluded from some areas of activity such as foreign and security policy, it does not have full legislative powers, its budgetary powers are limited, and finally it does not have the power to overthrow a government.

The case for the legitimacy of the EP rests on the democratic mandate of its directly elected MEPs. The growing power of the EP both in terms of the budget and in the application of the codecision process strengthens its legitimacy. Joe Fahy (Dooge and Barrington, 1999:98) describes how Parliament has increased its powers ‘bit by bit’ and that this provides ‘a democratic aspect to EU policy’.

6. Council of Ministers

The Council of Ministers is the main decision making body of the EU. Each council meeting is attended by the appropriate minister from each EU country (agriculture, foreign affairs, transport, and so on). The minister from the country holding the presidency of the EU chairs the meetings. Supporting the Council of Ministers is COREPER and the Council Working Groups. COREPER (or, Comité des représentants permanents), is the Committee of Permanent Representatives in the European Union. COREPER considers the draft legislation from the Commission and manages the agenda for Council meetings. This streamlines the process and allows ministers to focus on just those issues on which agreement cannot be reached (Craig 2003:67). The Heads of State of the twenty-seven members of the EU, known as the European Council, meet four times a year, chaired by the president or prime minister of the country holding the presidency of the EU.

The case for the legitimacy of the council rests on fact that each of the ministers has been democratically elected to represent the interests of his or her country. The council has allowed the power of the EP to grow at its expense and at the expense of some efficiency in the decision making
process. This transfer of power to directly elected members of the European Parliament demonstrates further commitment on the part of the Council to increasing the legitimacy of the process.

7. The changing relationship between Council and Parliament

The Council and Parliament share legislative power through a number of procedures. The consultation procedure is the weakest of these and involves the Council seeking the opinion of the Parliament; however they are not bound by the view expressed. Under the co-operation procedure, introduced by the Single European Act in 1987, the Parliament can give its opinions and seek amendments. If on a second reading the amendments are not implemented, the Council is obliged to provide the Parliament with an explanation of its position (Nugent 2006:243). Also introduced in 1987 was the assent procedure, which required the European Parliament to give its assent to any international agreements, negotiated by the Commission, to any proposed enlargement of the Union, or to rules governing the operation of structural funds, or to significant trade agreements with non-EU countries. The Maastricht treaty introduced the fourth and most significant procedure in 1992. The codecision procedure puts the Parliament on an equal footing with the Council when legislating on a wide range of issues. These include free movement of workers, the internal market, education, research, environment, health, culture, consumer protection, and so on (Fontaine 2006:19). The Parliament can reject a proposal from the Council in any of these areas if a majority vote against it.

Dukes (Callanan 2007:161), argues that the codecision procedure puts an extra duty on ministers to either anticipate the mood of Parliament or to engage in negotiation and conciliation in the event of divergent views. This is quite different to the behaviour of ministers in a national parliament. The relationship between the Council and the Parliament under codecision is very different to the relationship between a national executive and a national parliament. Dukes (Callanan 2007:171), points out that as the legislative function is now shared, ministers are not in control at EU level to the same extent as they are at a national level. The Council and Parliament are now formally equal partners in the legislative process (Shackleton and Raunio 2003).

However, the Council does meet in private and is accountable at state level, where national parliament may question agreements rather than to an EU forum. The ceding of power to agencies such as the ECB which the national parliaments cannot scrutinise is also problematic. Comitology also is seen as a reason for poor accountability. Committees set up by governments to supervise the executive tasks of the commission have sometimes ‘gone native’ and developed a life of their own. Føllesdal and Hix (2006) proposed is that the Council should be more transparent, voting records should be published to allow the media to scrutinise the process of decision making. Also, that the Commission should be separated into its regulatory function and its policy/political function; the latter subject to more scrutiny and argument.

The solution, which does seem to be evolving, lies in giving more power to the Parliament, greater transparency in the Council, wider consultation by the Commission and greater honesty from national parliaments in discussing European issues, rather than blaming Brussels bureaucrats. The direct election of the Commission President either by the citizens of Europe or by national parliaments would also be desirable.

8. EU’s communication with and engagement with European citizens

In 1992 the Commission appointed an expert group to evaluate the ways in which the EU provided information to the citizens of Europe. The report, published in March 1993, advocated the use of new technologies for disseminating information. The report was controversial as it was perceived to be promoting integration and attempting to influence the media. Its recommendations were seen to be too close to the line between information and propaganda (Sheehy 1997). In 1994 the Bangemann Report called for the use of new technologies to deliver government information to the citizens of Europe and saw this as a vital component of ‘cohesion’ and bringing citizens closer together. To continue this work the Commission established the Information Society Forum in 1995.

The use of the Internet as a communications tool was slow to take off in Europe compared to the United States. In Europe the initial usage of ICT was on the creation of databases. CORDIS (Community Research and Development Information Service), EUREKA (A Europe-wide network for industrial research and development), EURODACAUTOM (a terminology database for the European Union), EURISTOTE (Database for research on European integration), and many more provided information on topics as diverse and research and development, European living conditions and
funded EU projects. The EU was putting its information on-line but not presenting it in an accessible or attractive way for citizens to find it or use it.

An attempt to address this was the establishment of EUROPA, the official website of the European Union, in 1995. The EU went online in a meaningful way and provided for the first time a navigable and relatively straightforward way for citizens to find information on the internet. By 2009 every institution, committee, and lobby group working in Europe had its own website. EUROPA remains a starting point for most of what a citizen might need to know. What is lacking, or perhaps the key weakness of this approach, is that it is dependent on an informed and motivated citizen going to look for information. There is no attempt at citizen engagement unless it is the citizen who goes looking to engage and even then the vast amount of information available makes the task a daunting prospect. It is not enough for political activity, processes, or policies to be published they must be perceived and understood by European citizens. This is the difference between transparency and publicity or engagement (Huller 2007). Whilst transparency has improved along with information availability the number of people accessing information is still small (Curtin and Meijer 2006:116). The Commissions White Paper on Governance in 2001 spoke about openness and transparency as a central normative task. The Laeken declaration created a framework for a transparent constitutional process and the Constitutional Treaty (and later Lisbon) declared open and transparent policy making as an important aim (Nugent 2006:116). This is still the language of top down provision of information and does not address the need to listen to the citizen or to allow input. The Commission’s White paper of 2001 suggested that the responsibility to promote public talk about EU issues lay with the member states. This is problematic as even if the member states were so inclined the difficulties of having national debates, in national media, led by national figures talk about other than national issues is unlikely and without input from outside, poorly informed (Huller 2007:573).

In the absence of an EU communications or publicity infrastructure two main intermediaries connect the public to the EU policy process; these are political parties and interest groups (Hix 2005:7). Political parties are nationally based and the websites and communications strategies focus almost exclusively on national issues with the possible exception of European elections. Political groupings in the EP are not equivalent to political parties and find it difficult to have a simple message to convey to the public. So it is that individual MEP are left to manage the promotion and information flow between the Parliament and their constituents. The results are mixed but there are some very good examples of MEPs who use the capabilities of ICT to maintain links with and keep constituents informed. It also allows for a two way communication process which is important for a consultative democracy. In the case of interest groups a similar mix of engagement with, and effectiveness of, their usage of ICT is evident.

9. New ways for the EU to connect with European citizens

Fifty years ago Lippmann (1952) stated that ‘the significant revolution of modern times is not industrial or economic or political, but the revolution taking place in the art of creating consent among the governed’. Giddens (2008), who popularised the term the third way, wrote about democratizing democracy. It was not that the people had tired of the democratic state but rather that they felt it not democratic enough. Early attempts to use ICT in government focused on the citizen as consumer and various interactions between the citizen and the state were put on-line. However, ICT offers new ways of engaging the public and Morison (2001:1) puts this well when he states;

‘It may be that any efficiency gains that are made by reinventing government and viewing it as just another provider are at the expense of an opportunity to use technology to more fundamentally reinvent democracy and re-work the relationship between citizen and state’

Morison (2007) has also discussed the broader use of ICT in the form of blogs, wikis, web chats and other participatory fora to increase participation of the citizen. In Stanford University a considerable amount of work has been done in the Persuasive Technology Lab to determine what makes web sites credible and believable and a useful summary of the results of their annual surveys of perceptions of credibility is available in BJ Fogg’s (2003:154) book on the subject. By these measures the information on many government and EU websites is far from persuasive or credible and does not fulfil the presumed intention of making a connection with the electorate. A good starting point on how blogs in particular might be better used by politicians to improve communications and increase civic engagement has been done by Wyld (2007) in his paper, ‘The Blogging Revolution: Government in
the Age of Web 2.0’. Curtin and Meijer (2006) make the point that transparency and the provision of information is important but not sufficient to strengthen legitimacy.

This paper started from Beetham’s (1998) standard of legitimacy based on meeting normative standards of governance and that this standard is measurable, partially, in terms of Bovens (2007) accountability framework of an actor, a forum for judgement, and an obligation to report to the forum. The relationship between technology and legitimacy is a complex one and clearly the creation of websites does not build legitimacy. What can be achieved are alternate forums for the state to interact with, and account to, the citizen. In an interview conducted by the author in March 2009, Eoin Ryan MEP was asked about his use of these alternate forms of communication:

“......there are literally hundreds of people who have accessed or responded to me on Twitter so that’s very interesting but it’s a whole new area for me. Facebook I’ve only just started but there is no doubt about it, you are reaching out to people who in the main do not read newspapers, and are not engaging in the normal channels for discussion on politics on what we do and what we don’t do.”

In a changing and increasingly virtual world the EU needs to reconnect with the citizens where they are and move on-line in a more meaningful way. The website EuroParlTV has started to broadcast debate from the EP and to present short video programmes about topical events in the EU (www.europartv.europa.eu). A possible further step would be to put a virtual Parliament online. In the United States a virtual House of Representatives was created in the online environment Second Life by George Miller, a California Democrat, and chairman of the House Education and Labour Committee. In 2008, Ed Markey the Democratic representative for the state of Massachusetts and chair of the House Energy and Commerce Subcommittee on Telecommunications and the Internet, held a congressional hearing simultaneously in congress and online. A number of government agencies in the United States are also using Second Life; the National Oceanic and Atmospheric Administration (NOAA), the Center for Disease Control (CDC), and the National Aeronautics and Space Administration (NASA). In the French presidential election of 2007 all four major candidates opened virtual headquarters in Second Life, to engage in debates, hold political rallies and take part in protests. A number of countries including Sweden and Serbia have established embassies in Second Life and some regions such as Tuscany in Italy have tourist centres.

In his run for the White House, President Obama used Second Life and other mediated environments extensively. Is this the way European politics will go? According to Eoin Ryan MEP, who the author interviewed for this paper in March 2009:

“......I’d have to be honest with you and say that to actually do what Obama did I think you are going to need to be more comfortable with it and for it to become part of your everyday life. But, I suppose if you had asked me ten years ago, would I use a PC? now I just don’t think about it, I just use it.”

So perhaps there are lessons for Europe. On the 29th of January 2009, Margot Wallström, the Vice-President of the European Commission in charge of Institutional Relations and Communication gave a speech entitled, “Conversations that shape policy” – lessons for Europe by Obama, the first Tech President. For Wallström (2009) the lessons from Obama’s campaign were, be clear and simple, use the new media, and engage with the citizen. She concluded by saying:

“Whether online or face to face, whether in the old media or the new, both in the EU and the US, what democracy needs is a real conversation, in plain language, between the people and the politicians. A conversation that shapes policy. Politics from the bottom up rather than top down.”

All of these examples, and many more, point to the possibilities for consultation and engagement between state and citizen. This is one way in which the power, described by Lukes (2005), to mould perceptions and preferences, can be regained by the EU, democracy democratized, and citizenship refreshed. Of course there are limitations to the use of technology. In Europe the issue of multiple languages is one not faced by the politicians using virtual worlds in US. The issue of the digital divide is important both the economic and generational divide. However, as technology becomes more prevalent in the lives of more of the electorate, barriers to entry will fall. The children of the dot.com generation, the digital natives, are becoming the students of today. Prensky (2001) discussed the generational differences in the way we use and interact with technology and suggests that students today think differently and process information differently from previous students because of their
interaction with technology. These students he calls digital natives. These digital natives are increasingly living in a dual world of virtual reality via environments like Second Life and World of Warfare. Second Life, despite its rapid growth and its current population of 13 million users is still one of the smaller virtual worlds. It is dwarfed by the number of children using clubpenguin.com, webkinz.com, and barbiegirls.com amongst many others (Wyld 2008). These children will have none of the reluctance of their parents about online interaction.

10. Conclusion

Democracy is in the DNA of the EU, it is implicit in the consistent support for the European project amongst the nations of Europe. Questions of legitimacy which arise in relation to the EU may be linked to how the EU is communicating with the citizens of Europe. In this post modern world of online virtual environments the EU, in common with all organisations dependent on citizen support for legitimacy, must connect with them in ways of the citizens choosing.

The role that technology can play in addressing any perceived legitimacy deficit or lack of accountability continues to grow. As recently as 10 March 2009, Eoin Ryan MEP asked the question in the Parliament:

“The Commissioner has put the development of ICT and of the information society which has a huge potential benefit for European economy and for society at the heart of its programmes. However, what is the Commission doing to ensure that certain sectors of European society such as older people, and people on low income are not left behind or forgotten in this process?”

Supplemental question:

“With the European elections only a few short months away what is the Commission doing to ICT to reach out to European citizens and to encourage interest and participation in EU activities specifically in the June elections?”

Websites, blogs and even Twittering seem to be forming part of the communication toolbox of our European representatives but interestingly the notion of a virtual parliament or citizen forum has not yet appeared. In concluding Gay Mitchell summed up his perspective on the notion of legitimacy.

“....what’s the European Union all about?....what it’s about is peace and stability full stop, everything else is a bonus and what a bonus it has been....I think the European Union is a miracle happening before our eyes and we’ve stopped believing in miracles. We really have to step back and think about that.... these institutions that replaced panzer divisions and trenches, the Commission, Parliament and Council, all of them democratically elected or appointed. I don’t see anything in business or trade unions more accountable than that. .... the question of legitimacy doesn’t even occur to me.”

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Factors Influencing Citizen Adoption of SMS-Based e-Government Services

Tony Dwi Susanto¹,² and Robert Goodwin¹
¹Flinders University of South Australia, Adelaide, Australia
²Institute of Technology Sepuluh Nopember, Indonesia
susa0004@flinders.edu.au
Robert.goodwin@flinders.edu.au

Abstract: This paper identifies the factors that determine citizens’ acceptance of SMS-based e-government services. It reports on a web-based survey, paper-based questionnaires, and phone-call interviews that collected 159 responses from 25 countries. The results indicate that there are fifteen perceptions toward using SMS-based e-government services that may influence citizens to use or to reject the services: perceived ease of use; perceived efficiency in time and distance; perceived value for money; perceived usefulness; perceived responsiveness; perceived convenience; perceived relevance, quality and reliability of the information; trust in the SMS technology; perceived risk to user privacy; perceived reliability of the mobile network and the SMS-based system; trust in government and perceived quality of public services; perceived risk to money; perceived availability of device and infrastructure; perceived compatibility; and perceived self-efficacy in using SMS. Whether or not a citizen adopts an SMS-based e-government service is influenced by these perceptions. To increase the acceptance of SMS-based e-government services, the systems should address all of these belief factors. An intensive advertising campaign for the services in all mass media channels is critically important to make citizens aware of and to provide detailed knowledge about the services. The advertising campaign should involve people who influence individuals’ decision making. These people include friends, family, teachers, experts, public figures, and government officials. This study found that Notification services are the most frequently used followed by Pull SMS, Listen, and Transaction SMS services. Notification services could be an appropriate starting point for governments who want to establish SMS-based e-government services.

Keywords: e-government, SMS, acceptance factors, six Level model of SMS-based e-government, technology adoption, users' behaviour, public services

1. Introduction

Delivering public services through the Short Messaging Service (SMS) channel is becoming popular in developed and developing countries. In December 2008, 54 national government agencies of the Philippines were providing SMS services to augment traditional public services; since 2006 Singapore’s citizens have been able to access 150 public services through a single SMS number. In Australia, SMS is used for bushfire alerts in Victoria and notification for public transport timetables in Adelaide. In Ghana, the Philippines and Indonesia, most local authorities provide SMS-based services for listening to people’s opinions. In Oman people can apply for jobs via SMS and currently the Bahrain government and the Chichester Council in the UK are developing integrated SMS systems (SMSeGov.info, 2009).

The use of Short Messaging Service (SMS) technology to enhance the access to and delivery of government services to benefit citizens, business partners, and government institutions is defined as SMS-based e-government. SMS-based e-government systems have enabled governments to communicate with and to provide a range of services for citizens, businesses and other government organizations through the SMS channel. Based on the service and the system complexity, Susanto and Goodwin (2008) classified SMS-based e-government services in a Six Level model: Listen, Notification, Pull-based Information, Communication, Transaction, and Integration levels. Current SMS-based e-government services can deliver most of the typical Internet-based e-government services (Susanto, Goodwin and Calder. 2008).

SMS-based e-government has a strategic role both in developed and developing countries. It has been reported that providing public services through the SMS channel has significantly reduced time and cost; introduced a cheaper, easier and faster information-accessing channel; improved transparency, accountability, communication, and relationship between government and citizens; made the services and procedures easier for the citizens; improved the district political image; engaged more people and increased citizens participation; and promoted e-Democracy (Lallana, 2004; Rannu and Semevsky, 2005; Bremer and Prado, 2006).
For developing countries, SMS-based e-government allows more people to access and to use e-government services. In the Philippines, for example, people prefer to contact their government using the SMS-based channel (87%) rather than Internet (11%) (Lallana, 2004: 30). People prefer a technology channel that is more familiar, simple and easy to use, supports their native language, uses a readily available device and infrastructure and is low cost. Therefore, in order to engage more people, Susanto and Goodwin (2006) argued that SMS-based e-government should become a front-line system for delivering e-government services in developing countries.

For government in developed countries, SMS-based e-government is popular as a complementary channel of existing Internet-based e-government. The advantages of SMS are: it is simple, easy to use, extensive in coverage, reliable in delivering the message, low in cost, and can reach citizens anywhere anytime including areas with no Internet access. These are reasons why the local authorities provide this alternative channel. In developed countries SMS-based services are provided to deliver information about emergency situations, reminders, or any other business activity which needs a prompt action by the clients such as a reminder of a tax due date or warnings of extreme weather. Some of the developed countries have also provided SMS-based transaction services such as purchasing a bus ticket or a parking ticket, paying tax, and voting via SMS (Monash University 2005).

Despite the high number of the initiatives and popularity of SMS-based e-government, no study of the acceptance of the services can be found in the literature. Most existing studies on e-government investigate Internet-based e-government, covering PC-based as well as mobile-based implementations (Cilingir and Kushchu, 2004; Ghyasi and Kushchu, 2004). In terms of the investigated aspects, the existing studies on e-government have covered wide-range topics including the adoption, development stage models, applications, infrastructure, and the business models (Lee and Hong, 2002; Dalziel, 2004; Choudrie and Dwivedi, 2005; Khosrowpour, 2005; Coursey and Norris, 2008). There is not a single study of the acceptance of SMS-based e-government. Current studies found in the literature are case reports (Lallana, 2004; Rannu and Semevsky, 2005; Lallana, 2008).

A study of the factors affecting the acceptance of SMS-based e-government is essential since in some cases the popularity of SMS itself does not guarantee the success of the SMS-based e-government service. Lallana (2004) and Alamay (2003) showed that even though SMS is very popular in the Philippines, some SMS-based e-government applications failed to engage people due to poor replies and back-office management which led to the lack of public trust of the services. Other experiences in Denmark and Sweden also showed that the cost of each SMS-based service is another determinant which influences citizen to use or not to use the services (Westlund, 2008). Hence, it is important to understand what factors might influence citizens' intentions to engage in government services provided by SMS. For governments and e-government practitioners, the understanding is necessary in order to devise practical methods for evaluating their existing SMS-based e-government systems, predicting how citizens will respond to the services, improving user acceptance by altering the nature of the systems and the services, and justifying the investment in the system.

This paper aims to answer the following questions:

- What influences a citizen to use or to reject an SMS-based e-government service?
- What should the local authorities do to ensure as many as citizens as possible use SMS-based e-government services?

2. Methodology

In most research on technology adoption particularly technologies for public use, it seems impossible to obtain information from all users (a census). Therefore, present research on technology adoption selects from 24 up to 1,099 users as the sample and limits the conclusions to particular contexts (Rogers, 2003: 26; Carter and Belanger, 2005; Choudrie and Dwivedi, 2005; Kortemann, 2005; Titah and Barki, 2005; Hung, Chang et al, 2006; Philip, 2006; Horst, Kutzschreuter et al, 2007; Awadhi and Morris, 2008). Validations of the models are conducted afterwards by other researchers across different organizations and populations. In the end, the models which are validated and applicable to many contexts become accepted and are the prominent models, such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT).
Conducting a survey involving all SMS-based e-government users around the world is impossible. Thus, to survey users from many countries with different backgrounds, this study conducted a *mixed-mode design survey* (Biffignandi and Toninell, 2005). In this study data was collected using a web-based survey, paper-based questionnaires and phone-call interviews and then integrated.

The web-based survey used both *internal and external approaches* to get respondents (Biffignandi and Toninell, 2005). The internal approach included *web advertisements* publishing the survey on some websites and on a social networking site (Facebook). The external approach was conducted by sending invitation emails to 31 mailing lists (the lists covered countries in Asia, Africa, America and Europe) on different topics (daily life, religion, culture, education e-government, ICT, Human Computer Interaction, e-government, governance, and telecommunication) as presented in Table 1.

**Table 1**: List of the email-groups as the sampling frame of the study

<table>
<thead>
<tr>
<th>No</th>
<th>Name of the Mailing List</th>
<th>Topic</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Egov4dev</td>
<td>e-government</td>
<td>International</td>
</tr>
<tr>
<td>2</td>
<td>Electronic Government</td>
<td>e-government</td>
<td>Indonesia</td>
</tr>
<tr>
<td>3</td>
<td>Jatengonline</td>
<td>e-government</td>
<td>Indonesia</td>
</tr>
<tr>
<td>4</td>
<td>Egov-indonesia</td>
<td>e-government</td>
<td>Indonesia</td>
</tr>
<tr>
<td>5</td>
<td>E-Pemerintah</td>
<td>e-government</td>
<td>Indonesia</td>
</tr>
<tr>
<td>6</td>
<td>e-ciacap</td>
<td>e-government</td>
<td>Indonesia</td>
</tr>
<tr>
<td>7</td>
<td>eGovIndia</td>
<td>e-government</td>
<td>India</td>
</tr>
<tr>
<td>8</td>
<td>India-egov</td>
<td>e-government</td>
<td>India</td>
</tr>
<tr>
<td>9</td>
<td>E-gov_Australia</td>
<td>e-government</td>
<td>Australia</td>
</tr>
<tr>
<td>10</td>
<td>Center-for-good-governance</td>
<td>governance</td>
<td>International</td>
</tr>
<tr>
<td>11</td>
<td>Dunia_ict</td>
<td>ICT</td>
<td>Malaysia</td>
</tr>
<tr>
<td>12</td>
<td>ICT_of_Bangladesh</td>
<td>ICT</td>
<td>Bangladesh</td>
</tr>
<tr>
<td>13</td>
<td>Bangia_ict</td>
<td>ICT</td>
<td>Bangladesh</td>
</tr>
<tr>
<td>14</td>
<td>DigAfrica</td>
<td>ICT</td>
<td>Africa</td>
</tr>
<tr>
<td>15</td>
<td>Telematika</td>
<td>ICT</td>
<td>Indonesia</td>
</tr>
<tr>
<td>16</td>
<td>APWKomitel</td>
<td>ICT</td>
<td>Indonesia</td>
</tr>
<tr>
<td>17</td>
<td>SCSJeddah</td>
<td>ICT</td>
<td>Saudi Arabia</td>
</tr>
<tr>
<td>18</td>
<td>DigitalFilipino</td>
<td>ICT</td>
<td>The Philippines</td>
</tr>
<tr>
<td>19</td>
<td>Muslim_lts</td>
<td>IT</td>
<td>International</td>
</tr>
<tr>
<td>20</td>
<td>Mastel-anggota</td>
<td>Telecommunication</td>
<td>Indonesia</td>
</tr>
<tr>
<td>21</td>
<td>Usability matters</td>
<td>Computer Human Interaction</td>
<td>International</td>
</tr>
<tr>
<td>22</td>
<td>Experiencedesign</td>
<td>Computer Human Interaction</td>
<td>International</td>
</tr>
<tr>
<td>23</td>
<td>Nycchi</td>
<td>Computer Human Interaction</td>
<td>USA</td>
</tr>
<tr>
<td>24</td>
<td>Sandchi</td>
<td>Computer Human Interaction</td>
<td>USA</td>
</tr>
<tr>
<td>25</td>
<td>Hciiidc</td>
<td>Computer Human Interaction</td>
<td>USA</td>
</tr>
<tr>
<td>26</td>
<td>Movement_of_Islamic_Unity</td>
<td>Religion</td>
<td>International</td>
</tr>
<tr>
<td>27</td>
<td>Eramuslim</td>
<td>Religion</td>
<td>Indonesia</td>
</tr>
<tr>
<td>28</td>
<td>Philippines_students</td>
<td>Education</td>
<td>The Philippines</td>
</tr>
<tr>
<td>29</td>
<td>eCulturalCenter</td>
<td>Culture</td>
<td>International</td>
</tr>
<tr>
<td>30</td>
<td>latss-alumni</td>
<td>Japan-Indonesia relationship</td>
<td>Indonesia</td>
</tr>
<tr>
<td>31</td>
<td>World Citizen</td>
<td>Daily Life</td>
<td>International</td>
</tr>
</tbody>
</table>

Technically, the users who were registered on the mailing lists were contacted via an email which provided a link directing them to the survey page and the research website http://smsegov.info. This survey page also recorded the respondents’ IP addresses in order to identify any respondent who answered the questionnaires more than once. All responses to the survey were voluntary and all participants were encouraged to complete all questions in the survey.

The questionnaire used in this study contained closed questions and opened-ended questions (Appendix 1). The open-ended questions were designed to obtain qualitative information (free answers) about motivation and people who influence citizens to use or not to use SMS-based e-government services. The questionnaire had been tested previously on a group of international students and an expert in e-government. Since the web-survey sample does not cover other citizens
who do not have access to or the skill to use the Internet, as a complement to the web-based survey, this study used phone-call interviews and paper-based questionnaires to involve people with no Internet access and skill. The same questions as in the web-based survey were asked.

3. Respondents profile

The web-based survey was run for 3 months (April – June 2009) and received 142 responses from respondents in 25 countries as shown in Table 2. Of these participants, the two largest nationalities were Indonesians and Indians (51.39 percent and 15.28 percent of the total respondents), following by Americans (6.25 percent), Bangladeshis and Tanzanians (3.47 percent each), Australians (2.08 percent), and the other 18 countries (0.6 up to 1.4 percent each).

Table 2: Respondents of the web-based survey based on countries

<table>
<thead>
<tr>
<th>Countries</th>
<th>Percent (N=142)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>51.39</td>
</tr>
<tr>
<td>India</td>
<td>15.28</td>
</tr>
<tr>
<td>United States of America</td>
<td>6.25</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>3.47</td>
</tr>
<tr>
<td>Tanzania</td>
<td>3.47</td>
</tr>
<tr>
<td>Australia</td>
<td>2.08</td>
</tr>
<tr>
<td>Iran</td>
<td>1.39</td>
</tr>
<tr>
<td>Ireland</td>
<td>1.39</td>
</tr>
<tr>
<td>Nigeria</td>
<td>1.39</td>
</tr>
<tr>
<td>Pakistan</td>
<td>1.39</td>
</tr>
<tr>
<td>Spain</td>
<td>1.39</td>
</tr>
<tr>
<td>Austria</td>
<td>0.69</td>
</tr>
<tr>
<td>Bahrain</td>
<td>0.69</td>
</tr>
<tr>
<td>Brazil</td>
<td>0.69</td>
</tr>
<tr>
<td>Canada</td>
<td>0.69</td>
</tr>
<tr>
<td>Gambia</td>
<td>0.69</td>
</tr>
<tr>
<td>Guatemala</td>
<td>0.69</td>
</tr>
<tr>
<td>Hongkong</td>
<td>0.69</td>
</tr>
<tr>
<td>Italy</td>
<td>0.69</td>
</tr>
<tr>
<td>Kenya</td>
<td>0.69</td>
</tr>
<tr>
<td>Norway</td>
<td>0.69</td>
</tr>
<tr>
<td>Oman</td>
<td>0.69</td>
</tr>
<tr>
<td>Philippines</td>
<td>0.69</td>
</tr>
<tr>
<td>Tokelau</td>
<td>0.69</td>
</tr>
<tr>
<td>Zambia</td>
<td>0.69</td>
</tr>
<tr>
<td>No country answer</td>
<td>1.39</td>
</tr>
</tbody>
</table>

In terms of gender, there were more male than female respondents (76.1 percent compared to 23.2 percent). In terms of age, the majority of the respondents were 31 to 40 years old (36.6 percent). Table 3 summarises the respondents by age and gender.

Table 3: Gender and age of respondents of the web-based survey (N=142)

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
<th>Null</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-20</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>21-25</td>
<td>19</td>
<td>4</td>
<td>0</td>
<td>23</td>
<td>16.2</td>
</tr>
<tr>
<td>26-30</td>
<td>25</td>
<td>6</td>
<td>0</td>
<td>31</td>
<td>21.8</td>
</tr>
<tr>
<td>31-40</td>
<td>37</td>
<td>14</td>
<td>1</td>
<td>52</td>
<td>36.6</td>
</tr>
<tr>
<td>&gt;40</td>
<td>27</td>
<td>8</td>
<td>0</td>
<td>35</td>
<td>24.7</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>33</td>
<td>1</td>
<td>142</td>
<td>100</td>
</tr>
<tr>
<td>Percent</td>
<td>76.1</td>
<td>23.2</td>
<td>0.7</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
As a complement to the web-based survey, phone-call interviews and paper-based questionnaires were conducted involving 17 Indonesians who did not have access to the Internet due to the lack of infrastructure or skill. They consisted of farmers, unemployed people, students, housewives and street vendors. The age and gender of the respondents are summarised in Table 4.

Table 4: Gender and age of respondents of the phone-call interview and paper-based questionnaire (N=17)

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-20</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>11.8</td>
</tr>
<tr>
<td>21-25</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>35.3</td>
</tr>
<tr>
<td>26-30</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>11.8</td>
</tr>
<tr>
<td>31-40</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>17.7</td>
</tr>
<tr>
<td>&gt;40</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>23.5</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>7</td>
<td>17</td>
<td>100</td>
</tr>
<tr>
<td>Percent</td>
<td>58.8</td>
<td>41.2</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

In total, there were 159 respondents from 25 countries involved in this study with the gender and age compositions as shown in Table 5.

Table 5: Gender and age of all respondents, web-based survey, paper-based questionnaires, and phone-call interview (N=159)

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
<th>Null</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-20</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>21-25</td>
<td>24</td>
<td>5</td>
<td>0</td>
<td>29</td>
<td>18.2</td>
</tr>
<tr>
<td>26-30</td>
<td>26</td>
<td>7</td>
<td>0</td>
<td>33</td>
<td>20.8</td>
</tr>
<tr>
<td>31-40</td>
<td>38</td>
<td>16</td>
<td>1</td>
<td>55</td>
<td>34.6</td>
</tr>
<tr>
<td>&gt;40</td>
<td>29</td>
<td>10</td>
<td>0</td>
<td>39</td>
<td>24.5</td>
</tr>
<tr>
<td>Total</td>
<td>118</td>
<td>40</td>
<td>1</td>
<td>159</td>
<td>100</td>
</tr>
<tr>
<td>Percent</td>
<td>74.2</td>
<td>25.2</td>
<td>0.6</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

The data indicated that the majority of the respondents in this study were from Indonesia and India, male and 31-40 years old. Overall, the survey involved respondents from Asia Pacific, America, Africa, and Middle East countries, and included respondents who have Internet access and ones who do not. The characteristics of this sample will be taken into account as a limitation in the conclusions.

4. Findings and discussion

4.1 Citizens awareness and adoption of SMS-based egovernment services

This study investigated the level of awareness and adoption of SMS-based e-government services among respondents. It categorized the percentages of the citizens into: (i) those who used SMS-based e-government services; (ii) those who were aware of, but did not use them; and (iii) those who were not even aware of the services. Figure 1 illustrates these findings. The results indicate that 43% of the respondents in this sample had used SMS services. Of the remaining 57% respondents, 27% stated that they were aware of but did not use the services and the remaining 30% were not even aware of SMS-based e-government services in their countries (Figure 1).

Of the citizens who were aware of the services (103 people), the percentage of those who did not use the services is 33% (34 of 103 people, see Figure 2). It means that a third of the people who were aware of the services did not use the services. This figure suggests that awareness of services is not sufficient to encourage citizens to use SMS-based e-government services; there are other factors to be considered and actions needed to encourage use of the services.

4.2 Citizens age and awareness and adoption of SMS-based e-government services

It was found that as the citizens’ age increased, there was more awareness of and adoption of SMS-based e-government services (Figure 3). The absence of the awareness as well as adoption among the 18 to 20 age group may be because of the very small number of respondents from this age group (3 people compared to the other groups which are 29 to 55 people). While most age groups (except the 18-20 age group) have similar levels of awareness, the majority of the adopters were between the...
ages of 31 and 40 years: 53% (29 of 55 respondents in this group) used the service. In a further study, it will be interesting to see detail of the trends for the respondents in the 40 years and above category by breaking down this group into smaller ranges. The findings also suggest that older citizens are aware of and use SMS-based e-government services.

Figure 1: Awareness and adoption of SMS-based e-government service (N=159)

Figure 2: Adoption of SMS-based e-government service among respondents who were aware of the services (N=103)
4.3 Citizens gender and awareness and adoption of SMS-based e-government services

Figure 4 illustrates that more males than females were aware of and used SMS e-government services. Of the 118 male respondents, 83 (70%) were aware of and 57 (48%) used the services compared to the 40 female respondents, 20 (50%) were aware of and 12 (30%) used the services. The percentage of male respondents who are aware of and adopt SMS-based e-government services is 69% (57 of 83 people), while the percentage of females who are aware of and adopt the services is 60% (12 of 20 people). This suggests that at the initial stage of implementation of SMS-based e-government services males are more likely to drive the adoption.

Figure 4: Comparison of awareness and adoption of SMS-based e-government services by males and females

The findings in Section 4.2 and 4.3 suggest that the higher the awareness of the service the higher the likelihood of citizens using SMS-based e-government services. This is congruent with most diffusion theories which suggest that awareness or individuals’ knowledge about the existence and functions of an innovation is an initial step toward an adoption-decision process for the innovation (Rogers, 2003: 169).
The findings also suggest that male citizens aged 31 to 40 years are the most likely adopters of the services. While the adoption levels of the males and the females who are aware of the services are relatively similar (69% and 60%), both in awareness and adoption levels the females are fewer than the males (see Figure 4).

Accordingly, in order to increase the adoption of SMS-based e-government services, governments should run intensive advertising campaigns about the services to make sure people are aware of the services. Since there are more female citizens who are not aware of and do not adopt the services than males, the campaigns should pay more attention to making females aware of the services. However, as suggested in Section 4.1 and referring to the Diffusion of Innovation theory, the Hierarchy-of-Effects and the Stage-of-Change models (Rogers, McGuire, and Prochaska in Rogers 2003:198), individuals’ decisions toward using an SMS-based e-government service require more stages than just awareness and each step involves variety of factors. Section 4.5 will discuss these factors.

4.4 Popular SMS-based e-government services

For local authorities who want to develop an initial SMS-based e-government service, recognizing what type of the SMS-based service is most likely to be used by citizens is necessary. The understanding may assist government to justify the investment in the system and to assist them in delivering the service effectively and efficiently.

Referring to the Six-Level model of SMS-based e-government, the survey asked citizens about the kinds of SMS-based e-government services they have used. The questions provided five answer-options: Listen, Notification, Pull SMS, Transaction, and others. Each option was explained by definition and example. The ‘others’ option was for respondents who had difficulty classifying the service, it was then defined using the explanation of respondent. Table 6 illustrates the findings.

<table>
<thead>
<tr>
<th>Kinds of service</th>
<th>Number of people</th>
<th>Percent of all respondents (N=159)</th>
<th>Percent of all respondents who used the services (N=69)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listen</td>
<td>28</td>
<td>17.6</td>
<td>40.6</td>
</tr>
<tr>
<td>Notification</td>
<td>49</td>
<td>30.8</td>
<td>71.0</td>
</tr>
<tr>
<td>Pull SMS</td>
<td>34</td>
<td>21.4</td>
<td>49.3</td>
</tr>
<tr>
<td>Transaction</td>
<td>22</td>
<td>13.8</td>
<td>31.9</td>
</tr>
</tbody>
</table>

It was found that Notification is the most popular service. Of the 159 respondents, 49 people had used Notification services. It means 30.8% of all respondents or 71% of respondents who used the SMS-based services had experience using Notification services. The Notification service is a one-way broadcast SMS service from government to citizens, such as weather warnings, changes of bus timetables, or tax due-date reminders. The popularity of this service may be because citizens can easily register for and unsubscribe from the service, and commonly the use of this service is free of charge.

The second favorite service is Pull SMS. This service enables citizens to ‘pull’ specific information by sending a request SMS.

The third frequently used service is a Listen service, which is an SMS channel for citizens to send report, complain, or to make suggestions to government.

Finally, the least popular is a Transaction service such as paying bills, taxes or parking fees via SMS. This may be because citizens consider that the service usage has more consequences such as risk of money loss or risk privacy.

4.5 Thinking like citizens think: what citizens think about using an SMS-based e-government service?

Adoption research has extended the traditional approach to technology acceptance which is studies of ergonomic or usability concerns to studies of individuals' behaviour when using technologies. The traditional approach believed that if the technology is easy to use or the intended users are able to
use the technology then they must be using the technology. In reality this approach does not cover all aspects of user acceptance. Rogers (2003) and Dillon (1996) argued that while ability to use any technology is obviously necessary, it is not sufficient to ensure acceptability; many technologies that are demonstrably usable are never accepted by the target users. Technology adoption theories show that usability is just one of many factors that influence individuals to accept a technology. It is suggested that in order to be accepted, a technology should meet the mind of the target users.

Specifically for SMS-based e-government, this study found that there are 15 beliefs which may influence citizens to use or to reject an SMS service (Table 7).

**Table 7: Individual’s beliefs which influence citizens to use or not use SMS-based e-government services**

<table>
<thead>
<tr>
<th>No</th>
<th>Factors</th>
<th>Percent (N=159)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Perceived ease of use</td>
<td>20.8</td>
</tr>
<tr>
<td>2</td>
<td>Perceived efficiency in time and distance</td>
<td>17.6</td>
</tr>
<tr>
<td>3</td>
<td>Perceived value for money</td>
<td>12.6</td>
</tr>
<tr>
<td>4</td>
<td>Perceived responsiveness</td>
<td>12.6</td>
</tr>
<tr>
<td>5</td>
<td>Perceived usefulness</td>
<td>11.9</td>
</tr>
<tr>
<td>6</td>
<td>Perceived convenience</td>
<td>9.4</td>
</tr>
<tr>
<td>7</td>
<td>Trust in the SMS technology</td>
<td>5.7</td>
</tr>
<tr>
<td>8</td>
<td>Perceived relevance, quality and reliability of the information</td>
<td>4.4</td>
</tr>
<tr>
<td>9</td>
<td>Perceived risk to user privacy</td>
<td>3.8</td>
</tr>
<tr>
<td>10</td>
<td>Perceived reliability of mobile network and system performance</td>
<td>3.1</td>
</tr>
<tr>
<td>11</td>
<td>Trust of the government and perceived quality of public services</td>
<td>3.1</td>
</tr>
<tr>
<td>12</td>
<td>Perceived risk to money</td>
<td>3.1</td>
</tr>
<tr>
<td>13</td>
<td>Perceived availability of device and infrastructure</td>
<td>1.9</td>
</tr>
<tr>
<td>14</td>
<td>Perceived compatibility</td>
<td>1.9</td>
</tr>
<tr>
<td>15</td>
<td>Self-efficacy in using SMS</td>
<td>1.3</td>
</tr>
</tbody>
</table>

**4.5.1 Simplicity is the main reason**

The findings indicate that the main reason why citizens use SMS-based e-government services is because they believe that the services are easy to use. The degree to which an individual perceives that an SMS-based e-government service is free of difficulty to use is defined as perceived ease of use. Respondents said that they used the services because the services are simple, practical, less hassle, easy to access, easy to use, and the service numbers are easy to remember. The more citizens perceived that an SMS-based service is easy to use the more likely they are to use the service. Accordingly, simplicity should become a main advantage of the services. The simplicity of SMS-based e-government services should cover the procedure to register for and to unsubscribe from the services, the information on how to use the services, the steps taken to get the information, and the reply message.

To make sure the registration for an SMS-based e-government service is easy for all citizens, the system should enable people to register through various channels such as SMS, Internet (web-based form), phone, fax, or by coming to the office. The registration data should be simple and easy to fill in. A number of options for unsubscribing from receiving Notification services should also be available for users. Providing an easy to use unsubscribe method will encourage users to join since they know they can easily discontinue their subscription to the service.

The service should provide information on how to use the service. A respondent to the survey rejected a service because an unclear instruction meant the service could not be used. This information can be provided as a brochure, a web page, or a ‘help’ feature on the SMS system (users may ask assistance on how to use the service by typing and sending ‘help’ word).

The way in which to use the service should be simple. For the Pull-based service, for example, the text format for the request-SMS should be simple, not case sensitive, and easy to remember. The information requested by clients should be sent in one SMS (the system should not send the client other options or instructions).
Moreover, the information sent to the citizens should be concise, clear and easy to understand. If it is needed, the system may use capital letters or punctuation marks to emphasize important words.

4.5.2 Perceived value for money: citizens are sensitive in SMS cost

Most of the respondents had perceptions that SMS is cheap; this is one of the reasons why they used SMS-based services. People are sensitive in terms of the SMS cost. This explains why some respondents rejected services which charged users more than the standard SMS cost (premium SMS charge). Even people who really need to use the services will weigh whether or not the benefits justify the SMS cost.

The Perceived value for money factor also relates to the perceived comparison between SMS and phone call cost. Some respondents did not use the SMS-based service if they could make a phone call at low cost for unlimited time. They expect SMS-based e-government services to be free or cheaper than phone calls. The Diffusion of Innovation theory (Rogers, 2003) explains this service attribute as the relative advantage factor; it suggests that individuals are more likely to adopt an innovation when they perceive that it is better than the idea or product it supersedes. The degree to which an individual perceives that an SMS-based e-government service is better value for the amount paid is defined as perceived value for money.

4.5.3 How much time and effort could be saved by using the service?

The third belief influencing citizens to use an SMS-based e-government service is perceived efficiency in time and distance. It is the degree to which an individual perceives that the service will reduce the time spent and effort to go to the public service office or to use another channel. Respondents said that they prefer to use SMS-based services because they are quick, take less time and provide faster services than the traditional services and the Internet channel. Accordingly, in order to be accepted government should ensure that their SMS-based services require less time and effort compared to other e-government channels.

4.5.4 Perceived responsiveness: People do not want to talk with machine

One of the advantages of SMS-based e-government channel is that people feel that they communicate with the government person-to-person. Some respondents used the service because they perceive they communicate directly with the decision makers.

However, as a consequence of the person-to-person perception, users of SMS-based services expect a quick reply. When they do not get any replies or responses, they reject the services. Specifically for the Listen services, citizens in the survey said that they did not use the services because they were pessimistic that their SMS would be received and forwarded to the right officials, responded to quickly and satisfactorily, and they will be informed of the progress of their message. They perceived that sending a report or complain to government via SMS is like sending a letter to an empty house. The degree to which an individual believes that his or her SMS will be responded by government quickly, appropriately and satisfactorily is defined as the perceived responsiveness. The higher the perceived responsiveness toward an SMS-based service, the more likely the person will use the service. Accordingly, to encourage people to use Listen services and to build the perceived responsiveness of the services, each citizen’s message should be replied to quickly and each sender should be informed that their messages have been received and read by the right officials. Senders should be informed of the response to and the progress of the message.

Additionally, in order to make messages in the Notification service seem personal for each receiver the service could add the client’s name to each message. This could improve the relationship between government and citizens.

4.5.5 Perceived usefulness: Does the service really address citizens’ needs?

The fifth belief is perceived usefulness, which is defined as the degree to which a citizen believes that using the SMS-based e-government service will help them to get what they want and make their life easier. Before deciding to use a service, the survey’s respondents wondered whether or not the SMS-based service provides information or functions relevant to their needs. If the service is relevant and satisfied their needs, they were likely to use the service.
4.5.6 Perceived convenience: Is the service easy to access anywhere anytime?

Another belief which influences citizens to use SMS-based e-government services is perceived convenience. It is associated with the degree to which a citizen perceives that the services can be accessed anytime anywhere. Since SMS is a basic feature of all mobile phones and mobile networks cover a larger area than the Internet respondents in this study perceived that they could receive, send or reply the messages anywhere anytime they want to.

4.5.7 Trust in SMS technology

Respondents who used the services explained that they trusted SMS-based e-government services since the messages are recorded by mobile phones and the SMS-based system, so they could recall the data and confirm a transaction anytime, they could not miss a message sent to them and they can check whether their messages have been delivered to the system or not. The respondents perceive that the SMS channel is concise and accurate.

On the contrary, respondents who did not use the services had perceptions that SMS is an informal channel so government would not pay serious attention to their messages, the number of characters in an SMS message is too limited to send a message, and they do not trust SMS security. The degree to which a citizen believes that using an SMS channel is safe and will not initiate any problems for him or her is one of the factors that influences citizens to use SMS-based e-government services. This factor is defined as the trust in the SMS technology.

4.5.8 Perceived relevance, quality and reliability of the information

Relevance, quality, and reliability of the information provided by the SMS-based services are another issue for citizens. People tend to reject Notification and Pull SMS services when they find that the information is not updated, is not relevant to their needs, unclear, not precise or insufficient in detail, not accurate, and of no value. The concern with the reliability of the information is higher when using SMS-based transactions and getting information about weather forecasts and timetables. The degree to which a citizen perceives that the information is relevant for him or her, reliable and of high quality is another factor which influences citizens to use or to reject an SMS-based e-government service.

4.5.9 Perceived risk to user privacy

In addition to the perceived trust in the SMS technology, when using SMS-based e-government services citizens also consider the risk to their privacy due to the SMS system or the government agency. Respondents who used SMS-based services for sending complaints and reports to local authorities said that they used the services because they do not have to meet person-to-person and disclose their names or other personal information. People who did not use the services perceived that using the service might initiate and propagate repetitive SMS marketing which is irritating and infringes their privacy. They worried that the agency or the SMS service provider will sell their mobile numbers or data to other organizations and businesses or use the information for other purposes. The degree to which a citizen perceives that using SMS-based e-government services and dealing with the government agencies may divulge his or her personal information and pose problems for his or her privacy (perceived risk to user privacy) is another determinant of service usage.

4.5.10 Perceived reliability of the mobile network and the SMS-based system

The survey also found that citizens put the performance of their mobile networks and performance of the SMS-based system as consideration factors when deciding to use or to reject SMS-based e-government services. Some respondents did not use the services because they were not confident that mobile networks provided the coverage and good connection performance (reliability and initialization speed) needed to use SMS-based e-government services. The performance of the SMS-based system itself also influences citizens, especially the response time and reliability of the services. The degree to which a citizen is confident that his or her mobile network is reliable when using an SMS-based e-government service and the SMS-based system is also reliable are other determinants toward using SMS-based e-government services.

4.5.11 Trust in the government and perceived quality of the public services

The degree to which citizens trust the government and perceive that the public services have been delivered well is another belief that influences citizens to use or to reject available SMS-based e-
government services. Some respondents of the survey did not use the service because they did not trust on the government and perceived that the quality of public services is poor. Since they found that the traditional public services were poor, they were sceptical that the electronic-services would be better. Moreover, the low accountability of the government made citizens afraid of sending reports, suggestions or even complaints. Instead of getting solutions from government, they believed that their messages might cause another problem for them.

4.5.12 Perceived risk to money
This factor refers to individuals’ belief that using the service might cause financial problems. Survey respondents stopped using SMS-based e-government services when they had the experience of receiving an unwanted SMS message for which they were charged. Also, they worried about SMS fraud and risks associated with SMS-based transactions.

4.5.13 Availability of device and infrastructure
Respondents pointed out that they used the SMS-based e-government services because they have the device (mobile phone) and the mobile network is available for them. The degree to which an individual believes that the device and infrastructure for using SMS-based e-government services is available for them is another determinant of the services’ usage.

4.5.14 Perceived compatibility
This factor refers to the degree to which a citizen perceives that the service is consistent with the existing public service channels and the popular communication media. The respondents, particularly from the United States of America, indicated that they did not use SMS-based e-government services because SMS is not a common or a popular communication channel for delivering public services in their country. They reject available SMS-based e-government services simply because most people do not use SMS; they use the Internet and land-line telephone. People tend to use a new technology or service when it is consistent with the existing values and past experience of the potential users (Rogers, 2003).

4.5.15 Self-efficacy in using SMS
Whether or not a citizen uses SMS-based e-government services is also influenced by his or her confidence in using SMS. The survey found that some respondents did not use the services simply because they had no idea of how to use SMS. The degree to which an individual perceives his or her ability to use SMS is one of the factors which influence a citizen to use or not use an SMS-based e-government service.

Overall, this study found 15 beliefs (or perceptions) that influence citizens to use or to reject SMS-based e-government services. In order to increase the acceptance of SMS-based e-government services, governments take into account these factors when designing and delivering the services.

4.6 Communication channels and influential persons
In addition to the beliefs factor, Rogers (2003) suggests that the success of an innovation also depends on the communication channels. The communication channels are the means by which information about the innovation spreads from one individual to another. Further, Rogers (2003:18) classified the communication channels into mass media channels, interpersonal channels, and interactive communication via the Internet. The choice of communication channel may determine whether the innovation will be or will not be transmitted to and influenced the target users.

The survey found that mass media channels are the most effective means of informing and influencing citizens about the existence and benefits of SMS-based e-government services. The majority of the respondents said that information in the mass media had made them aware of the services and influenced them to use the service.

In terms of interpersonal channels, the findings (Table 8) show that citizens were influenced to use SMS-based e-government services by friends, family, experts, public figures, teachers, and government officials. Most of the respondents sought advice and information about SMS-based e-government services from their friends and families.
Table 8: External factors which influenced citizens to use or reject SMS-based e-government services

<table>
<thead>
<tr>
<th>No</th>
<th>External factor</th>
<th>Percent (N=159)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Media</td>
<td>22.0</td>
</tr>
<tr>
<td>2</td>
<td>Friend</td>
<td>8.8</td>
</tr>
<tr>
<td>3</td>
<td>Family</td>
<td>4.4</td>
</tr>
<tr>
<td>4</td>
<td>Expert</td>
<td>1.3</td>
</tr>
<tr>
<td>5</td>
<td>Public Figure</td>
<td>0.6</td>
</tr>
<tr>
<td>6</td>
<td>Teacher</td>
<td>0.6</td>
</tr>
<tr>
<td>7</td>
<td>Government officials</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Referring to the *Diffusion of Innovations* (DOI) theory and the Valente and Saba study (1998), these findings suggest that the mass media play a critical role in increasing awareness and detailed knowledge about available SMS-based e-government services. Personal networks, particularly those that involve friends and family of the target users, experts, public figures, teachers, and government officials are associated with all steps to services adoption. The steps include: the awareness of, detailed knowledge about, attitude toward, and intention to use the services. Individuals who lack personal contact with users of SMS-based e-government services may turn to the mass media for information about the services. The interactions between the mass media, personal networks, and an individual are shown in Figure 5.

This study suggests that governments should advertise services on all the mass media channels in order to make citizens aware of and to provide detailed knowledge about the services. These mass media campaigns are expected to initiate inter-personal networks influence toward using the services and to influence individuals particularly those who lack personal contact with other users of the services. To improve the effectiveness of the advertising, governments should involve families and friends of the target users and use opinion leaders such as experts, public figures, teachers and government officials. In terms of the content, the advertising should convince people that the services accommodate their perceptions, as discussed in Section 4.5, toward new SMS-based e-government services.

![Figure 5: The interactions between mass media, personal networks, and individual: (a) The mass media reinforce interpersonal communication in influencing the use of SMS-based e-government services, (b) the mass media substitute for interpersonal communication in influencing using the services (adapted from Valente and Saba, 998)](image-url)
5. Conclusions, limitations, and next study

To design and to deliver SMS-based e-government services, local authorities should consider the expectations and the perceptions of citizens toward using the services. This study indicates that whether or not citizens adopt SMS-based e-government services is influenced by the fifteen beliefs about using SMS-based e-government services: perceived ease of use; perceived efficiency in time and distance; perceived value for money; perceived convenience; perceived availability of device and infrastructure; perceived usefulness; perceived responsiveness; perceived relevance, quality and reliability of the information; trust in the SMS technology; perceived risk to user privacy; perceived reliability of the mobile network and the SMS-based system; trust in the government and perceived quality of public services; perceived risk to money; perceived compatibility; and self-efficacy in using SMS.

Among the factors perceived ease of use, perceived efficiency in time and distance, value for money, perceived convenience, and perceived availability of device and infrastructure are the most important in influencing the use of SMS-based e-government services. Therefore, governments should focus on these advantage factors in promoting SMS-based e-government services.

Common factors which discourage citizens adoption of available SMS-based e-government services include: perceived usefulness, perceived responsiveness, perceived relevance, quality and reliability of the information, trust in the SMS technology, perceived risk to user privacy; perceived reliability of the mobile network and the SMS-based system, trust in the government and perceived quality of public services, perceived risk to money, perceived compatibility, and self-efficacy on using SMS. Hence, in order to minimize resistance to the services, government should address all of these factors. For example, to increase perceived usefulness of an SMS-based e-government service, government should make sure that the service meets citizens’ needs by conducting a preliminary survey before designing the service; to increase perceived responsiveness of a Listen SMS service, government could setup an automatic reply system and assign a group of staff to manage incoming SMS messages; to increase trust in the SMS technology, government could use encryption with each message; and to minimize perceived risk to user privacy and perceived risk to money, the government could publish a privacy statement, assure the confidence and security of the senders, and setup an easy and reliable system for verifying each transaction including a refund procedure.

In terms of popularity, the Notification service is the most frequently used SMS-based e-government service, following by Pull SMS, Listen, and Transaction. Notification services are appropriate initial SMS-based e-government services.

In order to increase usage of SMS-based e-government services, governments should make people aware of and provide information about the services. Governments should run advertising campaigns on using the services in all mass media channels. The advertising should involve family and friends of the target users and be delivered by experts, public figures and teachers. In designing and delivering the services, government should address the 15 perceptions about SMS-based e-government services. This should give citizens positive attitudes towards using the services which will lead to intention to use and actual use of SMS-based e-government services. The relationships among the beliefs, intention to use, and actual usage of SMS-based e-government services will be investigated further in the next study.

This study incorporates a number of features, including a mix of web-based survey, paper-based questionnaires, and phone interviews to obtain an appropriate mix of respondents from 25 different countries (the respondents include people who interact with public services, people who have Internet access and people who do not have Internet access, and citizens with a variety of occupations and levels of education); the open-ended questions enables a variety of answers from the respondents. These lend significant strength to the study. However the demographics of the respondents, the majority were from Indonesia (51.39%) and India (15.28%), male (74.2%), aged 31-40 years old (34.6%), and mainly people who have Internet access (89%) should be taken into account in any attempt to generalize the findings.
6. Appendix 1: Survey questionnaire

Citizens' Motivation to USE or NOT TO USE
an SMS application for public services

Part A. Demographics
1. Sex: ☐ Male ☐ Female
2. Age (years): ☐ 18-20 ☐ 21-25 ☐ 26-30 ☐ 31-40 ☐ >40
3. Nationality: [ ]

Part B. Motivation to Use or Not to Use an SMS Application for Public Services
4. Are you aware of an SMS application for public services in your country? ☐ YES ☐ NO
   (SMS applications for public services are any public services provided by government through Short Messaging Service channel, for example sending complaint/report to government via SMS, getting information about bus timetables using SMS, paying tax via SMS)

5. Have you ever used the SMS service? ☐ YES ☐ NO

6. If YES, Which kind(s) of service have you used? (You can choose more than one)
   ☐ Sending SMS about opinions, complaints, or reports to government official/institution.
   ☐ Receiving SMS notifications, such as messages about disaster warnings, bills, or news update.
   ☐ Sending SMS in order to get some information, such as sending SMS to get information about bus timetables or weather.
   ☐ Doing transactions via SMS, such as paying bills using SMS.
   ☐ Others: [ ]

7. Why did or did not you use the service:

8. Who is/are person(s) who influenced you to use or not to use the service? (If any):

Thank you very much for your time and participation

References


Building on Success: The Diffusion of e-Government in the American States

Hyun Jung Yun and Cynthia Opheim
Texas State University San Marcos Texas, USA
hy12@txstate.edu
co01@txstate.edu

Abstract: The purpose of this study is to determine what factors encourage the diffusion of Internet technology, or e-government, in the American states. Different dimensions of digital technology are examined by investigating the spread of both e-service and e-democracy. A longitudinal mixed linear model is used to test the direct effects of states’ political, economic, demographic, and ideological factors on the states’ efforts to adopt Internet technology over the first seven years of the new millennium. The results indicate that the adoption of Internet technology is a cumulative process; a state’s preexisting digitalization is continuously built on progress in expanding the governmental digital services and outreach. States whose leaders are engaged in professional networks are more likely to adopt e-government. Institutionally powerful governors also encourage the adoption of on-line technology. The study concludes that the spread of Internet technology in providing services and expanding outreach fits the explanatory analysis of noncontroversial policies that are diffused by a process of emulation. Executive power, leadership, and professional networks reinforce this pattern of emulation.

Keywords: e-government, e-service, e-democracy, internet technology, emulation, leadership, professional networks

1. Introduction

One of the most rapid innovations taking place in state governments today is the increased use of the Internet to provide services and access to citizens. A recent study by the PEW Research Center on the States (2008a) found that states are using the Internet to make it significantly easier for citizens to do business on-line. In Michigan obtaining an air quality permit used to take from six to eighteen months; it now takes a matter of days. In many states a citizen is able to renew a drivers license or auto registration, pay a fine, or locate information on sex offenders or missing persons on-line. In over 20 percent of the states these services are provided in different foreign languages. States are also providing increasing opportunities for citizens and public officials to interact. This trend in public outreach and participation has made it easier for interested parties to seek information about specific issues, send comments to public officials, and even personalize communication. While few studies show that increased Internet access improves citizens’ basic trust in political institutions, digital government does appear to improve perceptions of government processes (Tolbert and Mossberger, 2006; Larson and Rainie, 2002; Gibson, Lusoli and Ward, 2007).

All the states have made rapid progress in implementing Internet technology. For example, in 2000, 78 percent of the states offered no on-line services; in 2007 only 14 percent of the states were without these services (West, 2007). However, implementation of digital services and outreach has taken place much more rapidly in some states. The purpose of this study is to determine why some states have implemented this technology more aggressively and comprehensively than others. In doing so, we investigate theories of how and why Internet technology has spread among the states and why the unique nature of these reforms constitutes an opportunity for states to emulate the successful strategies of other states. Thus we seek to make a contribution to the research literature on the diffusion of public policy in the American states.

2. The concept of e-government

The term “e-government” is a comprehensive term that is sometimes referred to as “on-line government” or “Internet-based government.” Dawes (2002) gives us a sense of the multidimensionality of the term when she states that it is “…the use of Internet technology to support government operations, engage citizens, and provide government services” (A Working Definition of Government, para 3). The first of these, government operations, primarily involves management practices that, although critical, are largely invisible to the public.¹

¹ For a recent analysis and ranking of state management systems, see the PEW research center on the States’ Government Performance Report, 2008a.
This analysis will focus on the last two functions: 1) government’s provision of services (e-services), and 2) government’s attempts to engage citizens (e-democracy). Stahl’s (2005: 4) use of the term e-government corresponds with the concept of e-service that includes “those aspects of public administration that have to do with the tasks of the executive.” Typically these tasks involve service delivery, but they may also involve the interpretation or enforcement of laws. Public agencies employ an entrepreneurial model, that is, they strive to emulate the success of business in building efficiency and cutting costs. Governments seek to adopt approaches that are customer driven and are closely associated with the reinventing government reforms of the United States and the New Public Management reforms abroad (Tolbert and Mossberger, 2006; Ho, 2002).

Although online provision of services can be part of the democratic process, e-democracy implies a process where citizens have on-line input and influence on policy decisions (Stahl, 2005). This involves different features of digital government, that is, the establishment of channels of communication and public outreach. It allows the public information and access to legislative networks and other areas of policymaking. While an important goal of e-government is to improve citizens’ lives by providing faster and more efficient services, there is a wider goal of increasing citizen participation in the process of governance and administration (Bolgherini, 2007).

West (2005: 8-9) maintains that Internet technology generally develops in four stages: 1) the billboard stage, 2) the partial service-delivery stage, 3) the portal stage with fully executable and integrated service delivery, and 4) interactive democracy with public outreach and accountability features. It is the implementation of the last stage, that is, e-democracy, that holds the greatest potential for transformational change. Not surprisingly, government bodies have been slow to incorporate technologies that enhance on-line participation. While public officials are incorporating significant changes in on-line service delivery, they are not as eager to use the Internet as a tool for system transformation (Ward and Lusoli, 2005; Wright, 2006). It may be that factors predicting the diffusion of digital outreach and participation are different from those that predict the diffusion of on-line services.

Observers note that the Internet has generally been more important in establishing communication networks outside of government than directly with government (Chadwick and May, 2003). This is exemplified in the U.S. by the Internet’s role in political campaigns. More citizens, especially younger people, are using the Internet for campaign news, for information and videos of candidates, for sending and receiving messages from friends and organizations, and for making campaign contributions (PEW Research Center, 2008b). Still the use of on-line citizen access to and interaction with policy-making bodies and officials is expanding and, at the very least, is increasing both the ease through which citizens receive government information and the quality of that information (Nugent, 2001).

3. Internet technology in the states

Implementation of Internet technology in American state governments is taking place at a brisk pace. In his annual review of features available online in American federal and state websites, West (2007) documents changes that have occurred since he began his review in 2000. In 2000 only two percent of government sites offered three or more services online; in 2007 that figure was 58 percent. He notes that almost all sites now provide publications and databases (98 and 84 percent respectively). More and more sites offer privacy and security statements. Almost half the sites (46 percent in 2007) now comply with the World Wide Web Consortium (W3C) standards for disability access.

The most common services offered by the states include business registration, professional licensing, driver license and license plate renewal, filing and paying taxes, locating information on sex offenders and missing persons, and “Do Not Call List” registration. Many state legislatures offer bill and legislation search and live broadcasts of legislative sessions. In addition, many states offer unique services. For example, in New York and New Jersey, using Privacy Policy links, citizens may request any site information that is public record. Georgia citizens may search for the lowest gas prices in the state, and South Carolina legislators provide legislative broadcasts with closed captioning (West, 2007: 4-5).

Not only are states offering more services, many are attempting to make utilization of sites more user friendly. The PEW Research Center on the States (2008a) found that states are doing a measurably better job with web transactions than just three years ago. There is also a notably greater effort at public outreach. In 2007, 89 percent of government sites allowed the public to e-mail a public official.
directly rather than simply e-mailing the webmaster (West, 2007). In some states, live updates are offered through RSS feed. West (2005: 106-107) describes interactive features such as “push technology and website personalization. The former allows citizens to activate communication devices such as e-mails, newsletters, or direct mail that is sent out automatically, while the latter allows visitors to tailor a website to their own preferences. Push technology could assist and empower interest groups who would have access to the latest and most useful information. Personalization could assist individuals in wading through the abundance of information that often characterizes searches of the Internet.

While state implementation of digital services and outreach is changing quickly, there is considerable progress to be made. Most sites exceed the reading level of the average citizen. Many are poorly organized; portal pages make it difficult to navigate through the sites. Some sites have limited accessibility, while others have no apparent privacy provisions.

Table 1 presents e-government scores of the states based on data from West’s 2007 review of 1,487 state websites. Two subcategories of e-service and e-democracy are separately presented. These indexes are on the scale of 100; 0 indicates no evidence of e-government and 100 indicates the highest e-government.

A state’s ranking in the category of e-service measures the presence of online publications, online databases, audio clips, video clips, foreign language or language translation, various online services and the number of services, several indicators of security policy and privacy policy, disability access, and the level of user fees. In the case of the latter, we reversed the scores because a lower fee indicates a higher ranking. A state’s ranking in the category of e-democracy measures the presence of e-mail addresses on the site other than the webmaster, the ability to post comments on the site through message boards, surveys, and chat rooms, the opportunity for citizens to register to receive updates regarding specific issues, the opportunity for citizens to personalize the site, and the provision of PDA access. In all three categories of e-government, e-service, and e-democracy, sites were assessed for average grade readability level.

Table 1: e-Government rankings of the states (West, 2007)

<table>
<thead>
<tr>
<th>STATE</th>
<th>E-SERVICE</th>
<th>E-DEMOCRACY</th>
<th>OVERALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALABAMA</td>
<td>46.30</td>
<td>27.00</td>
<td>37.20</td>
</tr>
<tr>
<td>ALASKA</td>
<td>45.40</td>
<td>31.40</td>
<td>40.10</td>
</tr>
<tr>
<td>ARIZONA</td>
<td>51.20</td>
<td>35.60</td>
<td>40.80</td>
</tr>
<tr>
<td>ARKANSAS</td>
<td>45.70</td>
<td>30.80</td>
<td>36.70</td>
</tr>
<tr>
<td>CALIFORNIA</td>
<td>53.30</td>
<td>42.20</td>
<td>46.00</td>
</tr>
<tr>
<td>COLORADO</td>
<td>51.30</td>
<td>33.60</td>
<td>41.70</td>
</tr>
<tr>
<td>CONNECTICU</td>
<td>60.30</td>
<td>37.80</td>
<td>44.20</td>
</tr>
<tr>
<td>DELAWARE</td>
<td>60.90</td>
<td>36.40</td>
<td>56.60</td>
</tr>
<tr>
<td>FLORIDA</td>
<td>48.10</td>
<td>38.00</td>
<td>40.80</td>
</tr>
<tr>
<td>IDAHO</td>
<td>44.90</td>
<td>35.80</td>
<td>45.60</td>
</tr>
<tr>
<td>ILLINOIS</td>
<td>54.00</td>
<td>30.80</td>
<td>41.80</td>
</tr>
<tr>
<td>INDIANA</td>
<td>52.00</td>
<td>46.20</td>
<td>44.40</td>
</tr>
<tr>
<td>IOWA</td>
<td>46.70</td>
<td>39.20</td>
<td>41.10</td>
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<tr>
<td>KANSAS</td>
<td>47.30</td>
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<tr>
<td>KENTUCKY</td>
<td>49.30</td>
<td>42.80</td>
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<tr>
<td>LOUISIANA</td>
<td>47.60</td>
<td>43.40</td>
<td>41.90</td>
</tr>
<tr>
<td>MAINE</td>
<td>58.10</td>
<td>38.80</td>
<td>62.00</td>
</tr>
<tr>
<td>MARYLAND</td>
<td>42.30</td>
<td>36.20</td>
<td>53.50</td>
</tr>
<tr>
<td>MASSACHUSETTS</td>
<td>51.40</td>
<td>36.40</td>
<td>53.80</td>
</tr>
<tr>
<td>MICHIGAN</td>
<td>54.80</td>
<td>47.20</td>
<td>64.00</td>
</tr>
<tr>
<td>MINNESOTA</td>
<td>48.50</td>
<td>44.80</td>
<td>44.40</td>
</tr>
<tr>
<td>MISSISSIPPI</td>
<td>33.00</td>
<td>31.80</td>
<td>33.10</td>
</tr>
<tr>
<td>MISSOURI</td>
<td>53.90</td>
<td>39.40</td>
<td>42.90</td>
</tr>
<tr>
<td>MONTANA</td>
<td>54.50</td>
<td>38.00</td>
<td>46.90</td>
</tr>
</tbody>
</table>
The top five sites overall are Delaware, Michigan, Maine, Kentucky, and Tennessee. The top five e-service sites are Delaware, Connecticut, Texas, New Jersey, and Maine. The top five e-democracy sites are Michigan, Indiana, Texas, Minnesota, and New Jersey. Although states which rank high in e-service are more likely to rank high in e-democracy ($r=.504$, $p \leq .001$), this does not always occur. The state of Delaware is a good example of the exceptional cases (See Table 1).

4. Explaining the differences in state innovation of e-government

Traditional explanations for the diffusion of policy in the states include a vast spectrum of geographic, political, economic, demographic, and ideological variables. The utility of these explanations depends largely on the type of public policy under scrutiny. For example, Hwang and Gray (1991) note that political factors are more important in the adoption of redistributive policies; economic factors are more influential in the spread of developmental policy. Certain "moral" issues such as abortion will be affected more by demographic and ideological factors (Mooney and Lee, 1995). Opheim (1996) found that states characterized by Elazar's (1972) "moralistic" political culture were more likely to make efforts to inform and educate the public about legislative activity.

In his comprehensive review of diffusion policy in the American states, Karch (2007) states that geographical proximity has played a traditional role in explanations of policy diffusion, but that it has become less influential because of "changes in communication and transportation technology...which make it easier to acquire policy-relevant information from far-flung states" (2007: 58). He presents three alternate explanations of policy diffusion: 1) imitation; 2) emulation; and 3) competition. Imitation results when states are encouraged to adopt policies of other states that have shared characteristics; ideological and resource similarities may encourage one state to adopt a policy implemented in another. For example, states who share demographic and geographical characteristics will almost certainly examine and adopt successful immigration policies of similar states. Grossback, Nicholson-Crotty, and Peterson (2004) find evidence of imitation in the adoption of lotteries and criminal sentencing guidelines.

Emulation occurs when a policy is diffused because leaders perceive it to be a success in those states that initially adopt it. The assumption is that officials learn from the success as well as the problems of other states. Volden (2006) identifies the process of emulation in his interviews with
administrators of the Children’s Health Insurance Program (CHIP). Unlike imitation, which tends to involve policies with ideological or partisan characteristics, policies diffused by emulation tend to be noncontroversial; emulation most likely occurs in “relatively non-political settings” (Karch, 2007: 64). Hayes (1996), in his analysis of policies with varying levels of controversy, finds that states tend to increase the comprehension of innovation over time, but that this pattern is strongest for the least controversial policies.

Communication regarding the success of innovation is facilitated by the development of national media and professional networks (Walker, 1969; Grupp and Richards, 1975; Mossberger, 2000). McNeal et al. (2003) find that administrative reforms are likely to be driven by states’ professional networks whose leaders perceive and appreciate the success other states have achieved. These authors examined the role of professional networks in diffusion of Internet technology and found them to be significant. In their analysis of the diffusion of health care policy, Carter and LaPlant (1997: 24) conclude that expanding channels of communication and the “explosion of national conferences and associations” may render geographic proximity less influential. Lieberman and Shaw (2000: 236) find that “media reports and professional networks of state policymakers and administrators appear to be important means of diffusion of welfare policy innovations…”

Competition is most likely to explain the diffusion of policy that puts states at an advantage among other states (or avoids states being put at a disadvantage). The most obvious type of policy to be explained by this theory is economic development policy (Karch, 2007: 62). Incentives to attract business, welfare policy, and lottery adoptions are examples of policies that may be diffused primarily because of competition among the states.

We theorize that emulation provides the most useful explanation of the diffusion of e-government among the states. Digital technology falls into the tradition of reinventing government reforms that have widespread appeal among administrators. The drive to increase efficiency and enhance customer service is universal among reform minded executives, and the latter’s rhetoric extols opportunities for outreach and citizen engagement as an important potential advantage of Internet technologies. Karch (2007: 61) notes that the success of policy initiatives can sometimes be difficult for policy-makers to evaluate. But it seems that adoption of Internet technology, especially the acquisition of on-line services, could be more easily evaluated in terms of cost efficiency. Thus the success of these initiatives might be more easily disseminated.

However, it is also possible that imitation plays a role in the adoption of digital services and outreach. Indeed, it is reasonable to assume that imitation and emulation are not always mutually exclusive. Technology reform may be influenced by ideological or resource variables. Offering state services online reflects the e-commerce paradigm. As noted, one of the most positive aspects of e-government is efficiency, the ability of governments to deliver the same or better services at lower costs (Stahl, 2005). While cutting costs is an objective for both liberal and conservative leaders, emulation of the business model has long been the purview of fiscal conservatives. Indeed, McNeal et al. (2003) find evidence that Internet services are more likely to be present in states with Republican-controlled legislatures.

Because of the initial and ongoing developmental costs of Internet technology, it is reasonable to assume that states with more resources would develop digital services and public outreach more rapidly. Using 2000-2003 data, West (2005) finds a relationship between states’ per capita income and the percentage of state agencies offering on-line services. In their analysis of 2000-04 data, Tolbert, Mossberger, and McNeal (2008) find that technology reform was not associated with traditional notions of “slack resources,” that is, gross state product. However, diffusion is more likely to occur in states with greater “resource environments” as measured by median household income, education, and urbanization. They also find an association between diffusion and states dominated by Republican legislatures. Thus states that are similar in resource availability and/or ideology may adopt digital technology more quickly and comprehensively.

The increasing presence of the web leads us to speculate that Internet services and outreach may be a function of citizen demand. The presence of a “problem environment, that is, a gap between citizen expectation and public policy (Nice, 1994), may mean there is public pressure on government to adopt a larger on-line presence, particularly for on-line services and information. However, there has
been little evidence that public pressure has played a role in the diffusion of e-government (McNeal et al., 2003; Tolbert et al., 2008).

Finally, Karch (2007: 71) emphasizes the significance of time as a determinant of policy diffusion. With regard to e-government, one would expect the initial adoption of digital technology to represent the biggest hurdle. Instituting electronic services and outreach requires significant start-up effort and the institution of a supporting infrastructure. Indeed, in their 2008 analysis Tolbert et al. reveal that institutional capability is a significant predictor of states’ implementation of e-government. However, unlike Tolbert et al., we are proposing that time itself separated from or combined with the increase in institutional capacity is the key factor in states’ continuous digitalization and diffusion of e-government. Once the initial investment is made, time creates a cumulative effect. That is, we would expect states that initially adopt this technology to make steady progress as technological infrastructures institutionalize and support development of digital services and outreach. Although digital services and outreach is generally accompanied by institutional support systems, the latter more likely result as a product of digital technology not as factor in its diffusion.

As a result of Karch’s theoretical foundation and other scholarly studies, we develop and test the following hypotheses:

- **Emulation Hypothesis**: The diffusion of Internet services and outreach is a function of the emulation of the success of these policies by administrative reformers. Evaluation of the success of on-line technology is easily evaluated and is disseminated through professional networks.
- **Imitation Hypothesis**: The diffusion of Internet services and outreach is a function of the imitation of these policies by public officials in states with similar resources and ideology.
- **Citizen Demand Hypothesis**: The diffusion of Internet services and outreach is a function of citizen demand for these services. Citizens in states with a greater web presence generate demand for services. Citizens in states with higher political participation rates generate demand for electronic accessibility and interaction.
- **Accumulation of Time Hypothesis**: The diffusion of Internet services and outreach is a function of states’ accumulated e-government effort over time. A state’s preexisting e-government capacity results in the development of institutional capability, which in turn encourages greater sophistication and comprehensiveness of continuous governmental digitalization.

### 5. Data and variables

The data for the dependent variable(s) come from Darrell M. West’s seventh annual update on the features that are available on-line through American state websites (2007). West evaluates 1,487 state websites covering all 50 states. An average of 30 websites is studied for each individual state. Each state received an overall ranking, and states are also given relative rank scores for each of 15 different website criteria. From West’s overall and 15 different individual criteria in states’ e-government trends, we reconstruct the concept of e-government into three different dependent variables. The first, from West’s overall e-government scores on the scale of 100, are used to establish a general index of e-government.

The second dependent variable, the e-service index, is a combined score of ten of the 15 provisions West adopts including criteria such as foreign language option, lower subscription fee, disability service, privacy policy option, level of security, number of service types, and other open information distribution options for government publication, data, and other audio and video devices. In order to make this e-service index consistent with the scale of West’s overall e-government score, the sum of these ten categories are averaged and then rescaled on the scale of 100.

The third dependent variable, the e-democracy index, is a combined score of five criteria: whether states’ websites have direct email communication options; whether they allow public comments; whether they provide regular notifications for information updates; whether they let members of the public personalize their own ways of site usage; and whether they are accessible through personal electronic devices. Averaging and rescaling the five items on a scale of 100 creates the index in the same manner as the e-service index.

To test the emulation hypothesis we include the following independent variables in our model: state participation in professional networks and the institutional power of the state’s governor. The
measure of state participation in professional networks indicates whether or not a state had representation on a leadership panel for the two most important state organizations: the National Council of State Legislatures (NCSL) and National Governors Association (NGA). Just as in the McNeal et al., 2003, a dummy variable measures the following: 1 if the state had representation on the NCSL or NGA, 0 if it did not.2

An active and energetic governor will often be a leading force for administrative reform and entrepreneurial government (Osborne and Gaebler, 1992; Durning, 1995). A governor who wants his/her state to lead the way can "overcome bureaucratic intransigence, find resources that facilitate innovation, and resolve group conflict that slows down the pace of diffusion" (Karch, 2007: 14). In their comprehensive study of administrative reform in the American states, Brudney, Herbert, and Wright (1999) found that agencies whose directors were directly appointed by the governor were more likely to initiate reform. For this reason, we include Beyle and Ferguson's measure of the institutional powers of the governor (2008).3

To examine the imitation hypothesis we included the following variables: legislative professionalism, states' per capita income, party control, and ideology score. As in earlier studies (McNeal et al., 2003; Tolbert et al., 2008) legislative professionalism is used as a proxy for the state's institutional capacity and the state's level of professionalism in general. We use Squire's 2003 index of legislative professionalism that combines measures of salary and benefits, time demands, and staff and resources.4

The measure of party control used in this study is the percentage of Democrats in the state legislature. We apply the Ranney Index (1976), as recalculated and updated by Holbrook and La Raja for 2003-2006 (2008).5 A score of 1 indicates complete Republican party control, while a score of 0 indicates absolute Democratic party control. We employ per capita income to measure the economic resources of the states (Council of State Governments, 2008).

To explore the ideological implications of e-service and e-democracy, we apply the policy liberalism index constructed by Gray (2008). Using ordinal data, the index combines and ranks states using five issues on which liberals and conservatives traditionally differ: gun control, abortion, welfare eligibility and work requirements, tax progressivity, and unionization. We anticipate that e-government, and e-service in particular, is influenced by the ideological appeal of cost saving and is more likely to be adopted by states with conservative climates.

Consumer demand for Internet services may be generated by a population characterized by heavy Internet use (McNeal et al., 2003; Mooney and Lee, 1995). We adopt percentage of households using the Internet either in or outside the home or in both places in each state (NTIA, 2007) to observe how the proportion of Internet users within states influences state e-government trends. In addition, because states with greater proportions of minority residents may experience the so-called "digital divide," we might expect less demand for digital services and outreach in states with heavy concentrations of ethnic minorities. We include a measure of the ratio of Hispanics and Blacks to Whites to examine the effects of this demographic variable (U.S. Census, 2007).

Demand for digital government may also be greater in states with participatory political cultures. Level of participation might have particular application to states with on-line features that are represented in e-democracy. An energized citizenry may demand more electronic access to policy information and public officials (Peters, 2001), and there is evidence that government web site users

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2 This measure is an update of the same used in McNeal, et al., 2003 with some revisions. There are only 10 (not eleven) positions used for NCSL because one representative was from Canada. For the NGA there were 9 Executive Committee members, 4 Standing Committees (not five) and no e-government committee. Thus the NGA numbers were 13 (not 17). The status was measured in the term of 2007-08.

3 The index combines scores on the strength of the following six powers: separately elected state-level officials, tenure potential, power of appointment, control over the budget, veto power, and party control.

4 In his article Squire makes a convincing argument for the timeliness of his measure, comparing state scores over a number of years that reveal little change from year to year. Thus we are comfortable using the 2003 index to predict 2007 digital trends.

5 This measure included the average percentage of the popular vote won by Democratic gubernatorial candidates; the average percentage of seats held by Democrats in the state senate, in all legislative sessions; the average percentage of seats held by Democrats in the state house of representatives, in all sessions; and the percentage of all gubernatorial, senate, and house terms that were controlled by the Democrats. For each state these four percentages were averaged to create an index value representing the degree of interparty competition. For a convenient interpretation of the analysis result for Republican Party control, we reverse-coded the Democratic party control index.
compare favorably with the general population for civic engagement (PEW Research Center, 2000). We include the average rate of voter turnout in the states for President, Governor, U.S. Senate, and U.S. House of Representatives from 2003-2006 as the measure of political participation (Holbrook and La Raja, 2008).

Since our study also seeks to control for the way previous trends of state government digitalization have proceeded, that is, to control for the effects of time, we utilize the yearly scores of e-government, e-service, and e-democracy from 2001 to 2007 rather than by simply adopting states’ static levels of digitalization of the current year. In other words, government digitalization of 2007 was gradually built upon state governments’ other assets combined with the states’ preexisting levels of technology capacity. Thus time variations are considered as both mediator and moderator in the model structure.

6. Analysis

We use Proc Mixed in SAS 9.1 to develop a longitudinal mixed linear model of state government digitalization in the relationship with political, economic, demographic, and ideological factors counting for a cumulative effect of digitalization over time. We utilize the fitted linear model with the AR(1) structure of error covariance matrix in order to explain time variations from 2001 to 2007. The AR(1) is realistic and is often assumed in situations when data are collected at equispaced time intervals and where observations close to each other in time duration are likely to be more closely associated (Diggle et al., 2002).

Therefore, our model structure considers auto-correlations of yearly state government digitalization that is likely to be more closely associated in short distance years. In other words, the dimension of a state’s e-government of year 2007 is more closely related to the level of the e-government of year 2006 than to the e-government scale of year 2005. Having the structural function in the model, we are able to control random variation of yearly changes. The model included time (χ1=0 (2001), 1 (2002), …, 6 (2007)), Republican party control (χ2), per capita income (χ3), minority ratio (χ4), voting turnout (χ5), institutional power of governor (χ6), policy liberalism (χ7), professional networks (χ8), households using internet (χ9), and legislative professionalism (χ10) to explore multiple factors of traditional states’ assets that influence state government digitalization.

\[
Y_{ij} = \beta_0 + \beta_1 x_{1j} + \beta_2 x_{2j} + \ldots + \beta_9 x_{9j} + \beta_{10} x_{10j} + \epsilon_{ij}, \text{where } \epsilon_{ij} \sim N(0, \Sigma)
\]

7. Results

Analysis of the overall e-government scores clearly shows support for the emulation theory of policy diffusion. Table 2 indicates that the overall e-government scores (Min=0, Max=100) are positively related to participation in professional networks (t=2.18, p≤.035) as well as the institutional power of the governor (t=3.27, p=.002). States participating in professional networks tend to have 2.4 points higher e-government scores than states without representation in professional networks. States that grant stronger institutionalized powers to their respective governors are more likely to have, on average, 4 points higher e-government scores than states without such gubernatorial power.

The influence of professional leadership networks for the dissemination and adoption of on-line technology is also evident when we break the dependent variable into e-service and e-democracy. States’ representation on professional networks, such as the National Council of State Legislatures (NCSL) and National Governors Association (NGA), is positively related to the level of states’ online services. States that participate in professional networks tend to have, on average, 3 more points in e-service than do states that have are not involved (t=2.10, p≤.042). States’ representation in professional networks also influences adoption of e-democracy measures. States with professional networks have 2 points higher e-democracy scores compared to states without such networks (t=2.28, p≤.028) (See Table 2).

The yearly accumulation of a state government’s digitalization is a significant factor in determining the current levels of e-service and e-democracy of the state. On average, the e-service (Min=0, Max=100) score has increased 4.17 points every year since 2001 (t=18.23, p<.001). In addition, states have improved their digital outreach (Min=0, Max=100) by about 3 points yearly since 2001 (t=18.59, p<.001). This indicates that a state with a level of digitalization capacity continuously and gradually improve their level of on-line service for and outreach to the public (See Table 2).
Hyun Jung Yun and Cynthia Opheim

Our analysis shows little support for the imitation and citizen demand hypotheses. Unlike studies using earlier data, legislative professionalism did not predict diffusion of Internet technology. The latter is not a function of a state’s per capita income, its ideological climate or its racial characteristics. Nor does citizen participation influence officials’ decisions to offer opportunities for citizen interaction. Indeed, higher voting turnout has a negative effect on state governments’ online service (t=-2.31, p≤.026) (See Table 2).

Table 2: Multiple regression analysis of e-service, e-democracy, and e-government

<table>
<thead>
<tr>
<th></th>
<th>Coef.</th>
<th>t (p)</th>
<th>Coef.</th>
<th>t (p)</th>
<th>Coef.</th>
<th>t (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>37.194**</td>
<td>2.48 (.018)</td>
<td>27.897***</td>
<td>3.13 (.003)</td>
<td>47.647***</td>
<td>4.23 (.001)</td>
</tr>
<tr>
<td>Time</td>
<td>4.174***</td>
<td>18.23 (.001)</td>
<td>3.041***</td>
<td>18.59 (.001)</td>
<td>.251</td>
<td>1.22 (.222)</td>
</tr>
<tr>
<td>Republican Party Control</td>
<td>-6.965</td>
<td>-1.36 (.181)</td>
<td>-3.302</td>
<td>-1.09 (.283)</td>
<td>-3.933</td>
<td>-1.02 (.312)</td>
</tr>
<tr>
<td>Per Capita Income</td>
<td>.001</td>
<td>.68 (.500)</td>
<td>-1.001</td>
<td>.99 (.330)</td>
<td>.001</td>
<td>.04 (.972)</td>
</tr>
<tr>
<td>Minority Ratio</td>
<td>-7.522</td>
<td>-1.31 (.197)</td>
<td>-1.798</td>
<td>-1.53 (.599)</td>
<td>-5.628</td>
<td>-1.31 (.198)</td>
</tr>
<tr>
<td>Voting Turnout</td>
<td>-3.262**</td>
<td>-2.31 (.026)</td>
<td>-1.058</td>
<td>-1.69 (.496)</td>
<td>-1.205</td>
<td>-1.93 (.060)</td>
</tr>
<tr>
<td>Ins. Power of Governor</td>
<td>2.763</td>
<td>1.68 (.101)</td>
<td>1.591</td>
<td>1.63 (.110)</td>
<td>4.034***</td>
<td>3.27 (.002)</td>
</tr>
<tr>
<td>Policy Liberalism</td>
<td>-1.095</td>
<td>-1.39 (.172)</td>
<td>-1.092</td>
<td>-1.49 (.362)</td>
<td>-1.067</td>
<td>-1.31 (.199)</td>
</tr>
<tr>
<td>Professional Networks</td>
<td>3.127**</td>
<td>2.10 (.042)</td>
<td>2.065**</td>
<td>2.12 (.028)</td>
<td>2.434**</td>
<td>2.18 (.035)</td>
</tr>
<tr>
<td>Households using Internet</td>
<td>-0.25</td>
<td>-1.17 (.865)</td>
<td>-1.010</td>
<td>-1.16 (.253)</td>
<td>-0.895</td>
<td>-0.86 (.393)</td>
</tr>
<tr>
<td>Legislative Professionalism</td>
<td>1.490</td>
<td>.21 (.835)</td>
<td>6.161</td>
<td>1.46 (.151)</td>
<td>1.850</td>
<td>.35 (.730)</td>
</tr>
<tr>
<td>σ²</td>
<td>50.524</td>
<td>28.258</td>
<td>43.979</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>0.574</td>
<td>0.307</td>
<td>0.325</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

-2*Max.loglik. 2239.84*** 2137.53*** 2283.27***

***p≤.01, **p≤.05, *p≤.10

8. Conclusion

The process of diffusion of this particular administrative reform, that is, the provision of citizen services and outreach over the Internet, seems to be driven by state leaders’ desire to emulate the technological advances of other states. We discover that these leaders may disseminate information about the nature and success of these reforms through professional leadership networks. Although an assessment of the actual success of these policies is beyond the scope of this project, the implication is clear. Efficiency and cost savings are outcomes that may be easily evaluated by state leaders. Hence the tendency to emulate other states’ successful efforts creates impetus for reform.

In addition, it appears that the preexisting levels of state governments’ digitalization and the cumulative effects over time enhance the exponential diffusion of this policy. Success itself breeds success, confidence, and support. As states add on-line technology, the momentum for adoption is often propelled by the addition of institutional infrastructure and support services. The increase in institutional capability, as well as executive and legislative support, spurs on-going efforts to develop and improve this new technology.

Reflecting earlier research, this study also reveals that digital reforms are more likely to be a top-down process rather than a result of citizen demand. Powerful governors, responding to suggestions and encouragement from state officials, may provide strong commitment of public resources to e-government.

Unlike studies using earlier data, we find little evidence of the imitation model of policy diffusion. This is not surprising given the rapid pace of technology reforms. States do not necessarily adopt digital technology as a result of their economic or ideological similarities to other states. These days the
appeal of greater efficiency and access applies to administrators in both Democratic and Republican controlled states and regardless of economic status. Participatory political cultures, as measured by heavy voting turnout, do not reveal a direct positive relationship between higher levels of digital services or citizen interaction.

We find no significant differences in factors that predict the spread of e-services as opposed to e-democracy. The absence of this distinction may be explained by the fact that citizen use of the Internet falls primarily into what Chadwick and May (2003) refer to as a “consultative” rather than “participatory” model of interaction. The opportunity for citizens to e-mail government officials, post comments, personalize websites, and engage in informal chatting allows interested and motivated citizens the opportunity to enhance and personalize information and express their thoughts and opinions. However, it does not automatically translate into transformational changes that increase public officials’ responsiveness and/or accountability. Hence, e-democracy in American state governments in its present form fits the theoretical model of emulation as the primary pattern of diffusion of noncontroversial policy initiatives.

Our findings seem to confirm the notion that the adoption of Internet technology by political leaders follows the incremental model of change. Government officials are cautious in adopting technology that may have the potential to transform the system. They are motivated by a “managerial” incentive to increase the flow of information to citizens and groups and to enhance the delivery of services to customers (Chadwick and May, 2003: 272). Leaders’ adoption of digital technology is steady and measured. It appears they are examining the adoption of this policy in other states and are emulating a process they are convinced is at least relatively successful.

However, as digital technology becomes more widespread and sophisticated, many believe there is the potential for transformational change in American state and national government. Quinn (1992) maintains that the cumulative impact of steady, incremental change over time is major. West (2007) compares the adoption of digital technology to the long and generally complex set of events that characterized the development of the automobile in the first half of the 20th century. As the adoption of digital services and outreach continue at steady pace in American governments, opportunities exists for future researchers to examine the nature of this change.

References


