Accessibility Evaluation of Korean e-Government

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Abstract. This paper aims to discover to what extent web accessibility is considered by the e-Government's of Korea. Accessibility of the e-Government of Korea was evaluated using Web diagnostic engines that check the compliance level of Web sites to the W3C guidelines. The accessibility of the e-Government was at a lower level, complying to only 10% of the priority 1 checkpoints. This means that lack of coherent government policy for web accessibility causes lack of providing standard e-Government services for the part of the population with special needs.

1 Introduction

As the technologies of the Information Society present new opportunities to address traditional problems in many conventional services, governments throughout the world have recognized the need to provide a better quality services, focus on the citizen, embrace more efficient and effective work practices and improve its administrative processes by developing e-Government. E-Government embraces the use of modern information and communications technologies to provide information about public services and enable the citizen to conduct transaction electronically for those services. However, there is a real risk that some people will be left behind. Ensuring access for people with disabilities is a key concern of government. There is a clear need to raise the levels of access and participation to ensure that e-Government delivers for all citizens, especially for citizens with disabilities with accessibility provision.

Even though the Korean e-Government web portal was ranked the highest in the world in the Brown University's Global E-Government 2006 evaluation, its W3C disability accessibility profile compliance was only at 15% (Table 1) [6]. Korea was the only country in the top 10 e-Governments of the report that complies with less than 20% of W3C accessibility guidelines, while the average percentage of the other top 10 countries' compliance level reaches almost to 60% in 2006, and 49% in 2005. Korea's accessibility provision in the e-Government was far less than that of the competing Asian countries such as Taiwan, Singapore, Japan, and Hong Kong. The report clearly showed that Korean government did not give much effort to bring citizens with disabilities to its e-Government services, without putting the accessibility and usability issues to the center of all.

This paper reports the results of an evaluative study on the Korean e-Government portal from accessibility perspectives.

Table 1. Accessibility evaluation of the top 10 e-Government countries (Brown University's Global E-Government 2006 evaluation) [6]

Country	Accessibility 2005 (%)	Accessibility 2006 (%)	Overall Points (/100)
Korea, Republic of	0	15	60.3
Taiwan	92	73	49.8
Singapore	13	20	47.5
United States	44	54	47.4
Canada	70	77	43.5
UK	68	75	42.6
Ireland	89	94	41.9
Germany	50	75	41.5
Japan	35	75	41.5
Spain	30	43	40.6
Average of Top 10	**49.1**	**60.1**	**45.7**

1.1   Objectives of the Study

The purpose of this paper is to describe the issues related to the accessibility of Korean government web portal as benchmark measures of good e-Government practices, associated with the digital divide issue. Our goal is to evaluate the accessibility of the Korean e-Government portal as the main theme of the centrality of the citizen in the provision of the services. It is our intention that the government can improve the accessibility of its services based upon the evaluation.

1.2   Related Studies

Government services are expected to be socially inclusive [3]. This means that all citizens who want to must have ready access to these services. The e-Government Act of 2002 defined the e-Government as 'the use by the government of web-based internet applications and other information technologies, to (A) enhance the access to and delivery of government information and services to the public, other agencies, and other government entities; or (B) bring about improvements in Government operations that may include effectiveness, efficiency, service quality, or transformation.' While detailing the definition of e-Government in its contextual aspects, Seifert and Relyea [4] argued that governments are obligated to focus on equality and accessibility to public services and information while representing the interests of the citizenry as a whole. As we can see from all these definitions made, concept of government services to its citizen is in the core of e-Government. Vassilakis et. Al [5] mentioned accessibility as a component of user-culture barriers, being an obstacle to the use of electronic services of e-Government. Failure to make adequate provision for users with disabilities results in their exclusion from service use.

   Accessibility is also an essential core of the services to its citizen. Accessibility is regarded a crucial requirement for successful endeavor for e-Government along with its availability [1]. They argued that the goal of web accessibility is to allow universal access to information on the web, by all people but especially by people with any impairment, no matter what its severity.

It is important to recognize that the citizen need not understand the complex structures of government in order to access the exact information or to get any government service as required in the traditional off-line services. The key recognition with in the government sector is that e-Government must be seen in the context of organizing around the citizen. In the center of these arguments are the accessibility and usability of the e-Government portal. However, accessibility is often disregarded in developing and organizing e-Government sites. Even though government recognizes the key aspect of the online delivery of services to citizens is the interaction between the citizen and government, government seldom collect feedback from citizens regarding its access and use. In other words, e-Government just becomes a one-way delivery of services. Government needs to recognize the accessibility to web an important aspect of quality of life for citizen with disabilities, and to realize the necessity to deliver it for them.

2   Korean e-Government Portal

Korean e-Government portal makes up several pages of ministry services. The site was www.egov.go.kr and consists in Korean. Among the sites analyzed are those major ministries' offices and agencies serving crucial civil affairs functions of government to citizens, such as health, human services, taxation, education and training for jobs, and regulations. Those were mainly G4C sites for citizens to access and use for their civil affairs services.

A total of 7 civil affairs service sites were evaluated. Each site consists of a specific service provided by a certain ministry of the government. The selected sites were as follows with the respective government ministry or agency which is in charge of the services in parentheses:

1. Four major welfare-related insurance services (Ministry of Health and Welfare)
2. Cyber Police Agency
3. e-government portal
4. Job training network (Ministry of Labor)
5. Home tax services (National Tax Service)
6. Inquiry of information openness (Ministry of Government administration and Home Affairs)
7. Tax arrears services (National Tax Service)

We used the software called "KADO-WAH" that was developed by Korea Agency for Digital Opportunity and Promotion to check standard accessibility features of Korean web sites. The program mainly checks if a web site complies to the Korean Web Content Accessibility Guideline 1.0 (KWCAG 1.0). The Korean Web Content Accessibility Guideline 1.0 (KWCAG 1.0) outlines design principles for creating accessible web contents. KWCAG 1.0 had adopted guidelines of Section 508 § 1194.22, a standard for accessible web-based intranet and internet information and applications. Similar to Section 508 § 1194.22, KWCAG1.0 puts into level 1 guidelines of WCAG1.0, a W3C prepared guidelines' priority 1 accessibility checkpoints. Satisfying the priority 1 checkpoints of Web content accessibility guidelines 1.0 is a basic requirement for some groups to be able to use web documents, that a web content developer must satisfy these guidelines.

3   Accessibility Evaluation

3.1   Guideline 1. Provide a Text Equivalent for Every Non-text Element

We checked how well the e-Governmet web sites comply to the guideline 1 of the WCAG 1.0. The use of "alt" and "longdess" was checked for all the graphic elements of web pages. These include all the images, graphical representations of texts, image map regions, and applets.

Overall, only 10% of the non-text element of the sites were provided with a text equivalent. One of the site had as much as 63% of compliance, while many sites did provide none for the text equivalent to the non-text elements.

This is a very significant problem, in that Korean web sites use lots of graphical images, pictures and graphical representations of texts.

3.2   Guideline 2. Don't Rely on Color Alone

We manually checked the color coded information on the e-Government web sites to examine the compliance to the guideline 2. None of the color-coded information provided another way to convey the information along with the color. Even though the manual checking was a very time consuming process and entailed subjective judgment, non-compliance was so apparent.

3.3   Guideline 9. Design for Device-Independence

We manually checked for device-independency of the selected sites. We checked if the sites can be navigated by only the keyboard without using mouse on these sites. The result was only four out of the seven sites were device independent. This means that the other three sites cannot be accessed without a mouse or equivalent pointing devices. We did not include any of the voice activation.

3.4   Guideline 12. Provide Context and Orientation Information

We checked how well the e-Government web sites comply to the guideline 12 of the WCAG 1.0. The use of title attributes on frames was checked. To use the "title" attributes on each frame is needed to facilitate frame identification and navigation.

Overall, only 9% of the frames of the sites were provided with a title attribute on the frames. One of the site had as much as 30% of compliance, while many sites did provide none for the title on frames. However, about 80% of the pages were provided with a title attribute, which makes it easier for screen readers to provide the page description.

4   Conclusion

This study evaluated the web sites that consist of e-government of Korea. Even though we evaluated selected sites of the e-Government of Korea, the result showed that there was a lack in accessibility even in some major checkpoints of KWCAG 1.0, such as providing text equivalents to the non-text elements. As was reported in the

Brown University's global e-Government evaluation report, Korean e-Government provided only approximately 10% of the checkpoint 1 accessibility features for the selected sites.

Even though it was reported that the web sites of Korean government's ministries and agencies complies about 34% of the checkpoint 1 accessibility features [1], the accessibility of the e-Government was at a lower level. This means that lack of coherent government policy for web accessibility causes lack of providing standard e-Government services for the part of the population with special needs. Government is required to set a policy for web accessibility together with an enforcement procedure for all the government web sites including e-Government. Results also suggested that the accessibility among the different sites was not evenly distributed. This is probably due to the fact the e-Government portal was simply acting as a mere gate to all the ministries' civil affairs service sites, not being a well-structured portal that should be organized and pre-planned as a whole. It should also be noted that without specific government policy or guidelines that dictate the accessibility concern, the design tends to focus more on aesthetics and efficiency by young designers of the private design companies who are not very well aware of the notion of accessibility. The inconsistent distribution of accessibility among the services that we observed during the tests also can be attributed to the lack of consistent guidelines that run through all the government ministries and agencies.

In general, governments need to understand the obstacles to making e-government's web sites accessible and should adopt the appropriate solution to improve it. They have to spread the awareness of the importance of accessible e-Government sites by developing appropriate policies. It is also important to understand that all e-Government endeavors are critically dependent on the accessibility of its integral portal [1]. The civil affairs services provided by e-Government are different from the individual government agency web sites in that actual transactions for civil services are available while the government web sites are only for providing information on the administrative agenda and public relations of the agencies. Therefore, e-government transactions have to be available for 24 hours a day, 7 days a week, particularly for those citizens who have handicaps.

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