ONLINE INTERFACE ACCESSIBILITY OF THE E-GOVERNANCE WEBSITES FOR

VISUALLY IMPAIRED PEOPLE

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Abstract

The emergence of e-governance has improved the accessibility of government and public utility services to the common man. Beyond normal persons the electronic modes of governance have gained importance among the citizens with disabilities. The electronic mode has helped or supported the visually impaired people in accessing through talking aids knitted to the websites. With Visually impaired persons (VIPs) improving their competence level on accessing information technology, an efficient E-government websites can make them self sufficient and independent as they do not have to rely on agents, middlemen, friends or relatives to consume the government services. However, online accessibility of e-government service websites is least researched in India. This paper aims to assess the online web accessibility of government services for VIPs. It is descriptive in native and rests on the passive primary data. Ten most common and important e-Government selected through focus group interview was observed for evaluation using web accessibility evaluation tool. The analysis of the research results revealed websites lacking in few in the areas of accessibility alerts, Features and also revealed errors. This paper not only contributes to the current literature but also scope for further research.

Introduction

Globalisation of the Indian market has helped foreign players to enter into the Indian market as it offers the opportunity in terms of market size. One of the most important advantages of foreign entrants is the transfer of newer technology that improves the business process and operations apart from increasing the channel of consumption. Currently companies have made sincere effort to reach customer not only through tradition
The emergence of electronic commerce has helped service providers to offer services through website that offer times and cost advantage. Apart from private players the Government departments and organisations have also tried to gain advantage through electronic channel. Through electronic governance the government enterprises were able to meet larger population from both urban and rural regions. E-governance had become a critical channel option for the government departments to offer their services as it helps the general public to access information and consume services anywhere, anytime without commuting. The governance based on internet and website has become very common in India with increasing younger generation. Apart from normal people there is a possibility for e-governance to become a useful instrument for the visually impaired population as it offers support through technology that can simplify and make it user-friendly. But the most important question is, if the electronic governance websites are really accessible for the ‘Visually impaired People’ (VIP). This paper is an effort to assess the online accessibility of the most common electronic governance websites for VIPs.

**Literature Review**

The Web is an important do-it-yourself tool for people with special needs, since they can retrieve various kinds of information by themselves through the Web and thereby reduce their dependency on others. For example, the visually impaired people can easily access the Web using screen reader or non-visual browsers such as voice browsers. However, the Web is becoming more difficult for blind users as more visual content, such as image links, is being used in websites. They pose serious accessibility issues which if not addressed could result in visually impaired users getting annoyed at wasted time and effort, to having to abandon a task or ask for sighted help. Special-needs persons are a rapidly growing segment of customers. India is now home to the world's largest number of blind people. Of the 37 million people across the globe who are blind, over 15 million are from India (Times of India, 2007). With sizable population and growing potential to consume banking services, the visually impaired customer segment needs to be concentrated by banks (Vinod Kumar et al., 2012). In particular, blind people who have mobility problems may successfully utilize on-
line banking services. Unfortunately these websites have complex layouts, crowded with active elements that are often difficult to navigate via screen reader. Indeed, it has been acknowledged that blind people face the serious problem that reading certain Web pages is quite difficult (Theofanos and Redish, 2003; Takagi et al., 2004; Fukuda et al., 2005; Leporini and Paterno, 2008; Buzzi et al., 2009).

The evolution of information and communication technology and the rapid growth of electronic commerce have fuelled a great diffusion of transaction-enabled websites. Usability is a key factor in the success of such websites. The term usability is precisely defined by the International Organization for Standardization in the ISO 9241, a multi-part standard covering a number of aspects for people working with computers: ‘the extent to which a product or website can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use’ (ISO, 1998).

Many factors can impact the experience at the online customer interface (such as a website), such as rapidity of finding the desired information, efficiency and security when carrying out the transaction, reliability of the delivery service behind the website and so on (Buzzi et al., 2009). They also researched on Usability and Accessibility of eBay for visually impaired persons and found that restructuring the web page in logical sections can provide blind users with a page overview. They also offered to understand that important guideline for simplifying user navigation is related to the logical partitioning of content (Buzzi et al., 2009).

The challenge to online customer interface designers and developers is to create transaction-enabled websites that are not only visually attractive, but are also accessible and friendly to visually-impaired people. Various studies have studied the usability/accessibility of electronic banking systems and include a general discussion on accessibility (Vinod Kumar and Victor Anandkumar, 2012), but research on visually impaired persons and their access of electronic governance websites is thus far not researched.
Research Objectives

Aim of the paper is to evaluate the accessibility of the most common electronic government websites for potential accessibility issues confronting visually impaired people. It tries to classify the accessibility issues in terms of the importance of the impediments they cause.

Research Methodology

This paper is descriptive in nature. The assessment of online accessibility of the government websites is done through passive primary data collection method. Web Accessibility Evaluation Tool (WAVE), provided by Web AIM was used for evaluation.

It highlights the different website accessibility issues faced by visually-impaired people. ‘WAVE’ is commonly understood as a web accessibility tool that can aid in the assessment of web content. Rather than providing a difficult technical report, WAVE shows the original web page with entrenched icons and pointers that highlight the accessibility of that page. These accessibility measurement icons are observed and collected as passive primary data. The data obtained by observation of events as they routinely occur are fundamentally more reliable and free from respondent bias (Sekaran, 2003). The objects of this study were the websites of government departments (shown in Tables 1).

Table 1 various electronic government websites used for assessment

<table>
<thead>
<tr>
<th>S.N</th>
<th>Services / department</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Recruitment services – Tamilnadu government / state public services</td>
<td><a href="http://www.tnpsc.gov.in/">http://www.tnpsc.gov.in/</a></td>
</tr>
<tr>
<td>2.</td>
<td>Recruitment board – Government colleges &amp; schools</td>
<td><a href="http://trb.tn.nic.in/">http://trb.tn.nic.in/</a></td>
</tr>
<tr>
<td>3.</td>
<td>Tamilnadu Electricity Board</td>
<td><a href="https://wss.tangedco.gov.in/wss/#">https://wss.tangedco.gov.in/wss/#</a></td>
</tr>
<tr>
<td>4.</td>
<td>Tamilnadu income tax Office</td>
<td><a href="http://iteftncircle.com/">http://iteftncircle.com/</a></td>
</tr>
<tr>
<td>5.</td>
<td>Corporation Office- Birth or death certificates</td>
<td><a href="http://www.chennai">http://www.chennai</a> corporation.gov.in/online-civic-services/birthanddeath.htm</td>
</tr>
<tr>
<td>6.</td>
<td>Metro water tax payment</td>
<td><a href="http://www.chennaimetrowater.tn.nic.in/services/online-bills.htm">http://www.chennaimetrowater.tn.nic.in/services/online-bills.htm</a></td>
</tr>
</tbody>
</table>
A total of 12 government (public) services websites were considered for the observation. Each site was observed in detail by pasting its Uniform Resource Locator (URL) in the WAVE tool.

The WAVE mechanism offers an output consisting of the accessibility concerns related to a particular URL and these issues were classified as Errors, Alerts and Accessibility characteristics (WAVE, 2012) based on the severity of the issues.

- Errors represent the presence of those issues which will almost certainly hamper accessibility of the website by a visually impaired customer.
- Alerts represent the presence of those issues which may or may not hamper accessibility, but typically indicate an area where accessibility is often an issue or where it may be made better. They should each be checked for possible impact.
- Accessibility Features are those issues for which the author should check for accuracy.

**Key Findings & Discussion**

Tables 2 show the accessibility issues of the Government services websites. The table depicts breakup of all three issues that pose threat to the accessibility of these e-governance website to the visually impaired people.

<table>
<thead>
<tr>
<th>No.</th>
<th>Website Description</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>Indian Railways</td>
<td><a href="https://www.irctc.co.in/eticketing/loginHome.jsf">https://www.irctc.co.in/eticketing/loginHome.jsf</a></td>
</tr>
<tr>
<td>8.</td>
<td>Provident fund</td>
<td><a href="http://www.epfotamilnadu.tn.nic.in/">http://www.epfotamilnadu.tn.nic.in/</a></td>
</tr>
<tr>
<td>9.</td>
<td>Tamilnadu state transport corporation</td>
<td><a href="http://www.tnstc.in/">http://www.tnstc.in/</a></td>
</tr>
<tr>
<td>10.</td>
<td>Pension &amp; pensioner welfare</td>
<td><a href="http://www.persmin.nic.in/Pension.asp">http://www.persmin.nic.in/Pension.asp</a></td>
</tr>
<tr>
<td>11.</td>
<td>UGC- Aid for education and research</td>
<td><a href="http://www.ugc.ac.in/">http://www.ugc.ac.in/</a></td>
</tr>
<tr>
<td>12.</td>
<td>Tamilnadu Housing Board</td>
<td><a href="http://www.tnhb.gov.in/">http://www.tnhb.gov.in/</a></td>
</tr>
</tbody>
</table>
Table 2: E-governance websites Accessibility Issues

<table>
<thead>
<tr>
<th>Government services and departments</th>
<th>Number of Errors</th>
<th>Number of Alerts</th>
<th>Number of accessibility features</th>
</tr>
</thead>
<tbody>
<tr>
<td>TNPSC- Recruitment services – Tamilnadu government / state public services</td>
<td>18</td>
<td>46</td>
<td>1</td>
</tr>
<tr>
<td>TRB- Teachers Recruitment board for Government colleges &amp; schools</td>
<td>30</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td>Tamilnadu Electricity Board</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Tamilnadu income tax Office</td>
<td>7</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Corporation Office- Birth or death certificates</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Metro water tax payment</td>
<td>20</td>
<td>2</td>
<td>23</td>
</tr>
<tr>
<td>Railway bookings and information IRCTC</td>
<td>17</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td>Provident fund</td>
<td>6</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Tamilnadu state transport corporation</td>
<td>0</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Pension &amp; pensioner welfare</td>
<td>20</td>
<td>20</td>
<td>9</td>
</tr>
<tr>
<td>UGC- Aid for education and research</td>
<td>15</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>Tamilnadu Housing Board</td>
<td>0</td>
<td>29</td>
<td>2</td>
</tr>
</tbody>
</table>

a. Accessibility Errors

Among the 12 government service websites, 4 services websites (34%) were without any accessibility errors, which mean these are the websites which are completely accessible by visually impaired people.

Government websites with ‘ZERO’ accessibility errors are

- Tamilnadu Electricity Board
- Corporation Office- Birth or death certificates
- Tamilnadu state transport corporation
- Tamilnadu Housing Board

There are only two (17%) government service websites with ‘one to ten’ (1 to 10) accessibility errors. Tamilnadu income tax Office and provident office department of Tamilnadu are the two websites with lower accessibility errors. Around 50% (6 out of 12) of the websites have 15 to 30 accessibility errors. These Five websites of the government departments have significant accessibility problems, which might make the complicate the accessibility of...
information and interaction for the visually impaired people. The below mentioned are the electronic governance websites with serious accessibility problems.

- TNPSC: Tamilnadu government / state public services recruitment services
- TRB: Teachers Recruitment board for Government colleges & schools
- Tamilnadu Metro water tax payment
- IRCTC: Railway bookings and information
- Pension & pensioner welfare of Tamilnadu
- UGC: University Grants Commission

**b. Accessibility Alerts**

The Alerts are tolerable and they may or may not be accessibility issues, but typically indicate an area where accessibility is often an issue or where it may be made better. They should each be checked for possible issues. TNPSC, TNR, IRCTC and TN housing board highlight very high accessibility alerts that can improved for better accessibility. These websites have above 20 alerts highlighted for improvement by the WAVE web assessment tool.

**c. Issues on Accessibility features**

The Wave did not record significant number of accessibility features any of the websites. But there are websites that highlight less than 5 accessibility features. It still cannot be ignored. This issue is a big concern for the government websites as the possibility of difficulty and misguidance is very high in case the inaccurate information available in the website. It becomes very critical for the departments to eradicate such inaccurate information in the website.

**Conclusion & Suggestion**

This finding above clarifies that none of the e-government websites are error free or issue free, all the website highlights some issues or errors those need to be concentrated. Therefore these Government departments need to work on their websites immediately as
their sites were detected to have accessibility issues which is likely to make it difficult for the visually impaired to have easy access to the banks websites.

In order to include visually impaired people for accessing electronic governance websites, the departments should comply with the following:

- Using Suitable alternative text: An alternative text must be used in place of image based links, maps, and buttons.
- Form labels: e governance websites must have descriptive and informative form labels. They must ensure that all necessary information for completing that form element is available within the label.
- Logical heading structure: All the headings must be ordered in a logical way.
- Descriptive and informative page titles.
- Assistive Technology Compatibility: Visually impaired customers use screen readers or other assistive technologies to access content through various senses or to modify content to be best perceivable to them. Therefore the Bank’s websites should be compatible with these assistive technologies.
- All the accessibility features should be periodically checked for accuracy.

References


7. Times of India (2007), “India has largest blind population”.


