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Quality and Performance Evaluation of the Sri Lankan e-Government web portal

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ABSTRACT: This study was conducted to evaluate the quality and performance of the official e-Government web portal of Sri Lanka. For this purpose some well recognized and generally accepted evaluation tools and frameworks were used. Web site evaluation framework of Panopoulou *et al.,* (2008) was utilised to evaluate quality and performance of official government web portal of Sri Lanka. The evaluation shows evidently that government used web portal mainly for promotional and information dissemination purpose.

Keywords: E-government, Information Communication Technology, Web portal

1. Introduction

Information and Communication Technology (ICT) is an extensively adopted innovative strategy to diminish digital gap among developed and developing countries. It is a potential tool for improving efficiency of public service and transparency of government, enhancing the public participation in policy and decision making, enabling public information and knowledge sharing and integrating marginalized groups (Rainford, 2006). The traditional governments in the most of developing countries deliver low productive service to the citizen at high cost (Hanna, 2008). Consequently, the developing countries are intensely trying to adopt e-government function to transform their government potential. The e-government is an encouraged vision of Sri Lankan government to make the full range of public information and service available electronically to all the citizens and government sectors facilitating accountable, accessible, efficient, responsive and transparent public service (Hanna, 2008).

Sri Lanka is an island in the Indian Ocean. According to the department of census and statistic, Sri Lanka has a population of 19.9 million (mid of 2007). Though it's a developing country, it achieved best social indicator in South Asia and it could be comparable with developed countries, (Jahankhani, 2008). In addition, Sri Lanka has achieved a good human development index of 0.743 in the mid of 2007. Adult literacy rate is 91%, which is one of the highest values among the countries in Asia (World Bank, 2008).

The telecommunication infrastructure development is an essential need for all the countries to meet their development goals. The successful development of ICT in Sri Lanka highly depends on the quality and cost effectiveness of telecommunication services. Telecommunication infrastructure of Sri Lanka is considerably in good stage among the South Asian countries (Rainford, 2006). The present tele-density of Sri Lanka is 61.4 phones per 100 inhabitants, which includes fixed phone density of 15.5 fixed phones per hundred inhabitants and mobile phone density of 45.7 mobile phone per hundred

inhabitants. Mobile phone subscriber's percentage of Sri Lanka is 74.6 % of total phone subscribers (Telecommunication Regulatory Commission, TRC) of Sri Lanka, 2008).

The present PC population is approximately 1,635,080 and PC density is 8.2 PCs per 100 people (Department of census and statistics, 2008). Reference to the latest statistics of TRC (2008), total number of internet and email subscribers is 215000 and internet subscriber's density is 1.5 subscribers pre 100 inhabitants. Further, the total number of internet user in Sri Lanka is 771,700 (International Telecommunication Union, 2007). The quality of internet service is uneven throughout the country. The Internet service quality is higher in urban area and lower quality service in rural area. Furthermore Broadband, ADSL, ISDN and dial up connection facilities are available in Sri Lanka. Meanwhile, Broadband ADSL connections are still only available in the major cities and urban area (International Telecommunication Union, 2007). The United Nation's e-government survey is presently available effective tool for measure the e-Government readiness of countries. The UN e-Government Survey (2008) presents a critical evaluation of the 192 countries' e-Government Readiness status. According to United Nation e-government survey (2008), Sri Lanka achieved e-Government readiness index of 0.424 which was below the world average of 0.454 and higher than sub-regional (South Central Asia) average of 0.357. It obtained the e-government rank of 101 out 183 countries (United Nation, 2008).

2. Research Methodology

There are numerous methods and tools developed by different authors to evaluate websites. Most of evaluation methods are more or less similar to each other and each method mainly focuses on specific aspects of web site evaluation such as Smith (2001) and Garcia *et al.*, (2005) mainly focus on content and navigation issues. Henriksson *et al.*, (2006) have proposed a more balanced evaluation method for different concepts of web site. However, there are deficiencies in all these methods in evaluating some specific concept of e-government web sites.

The evaluation framework of official web portal of Sri Lanka has been drawn from Panopoulou *et al.*, (2008) web site evaluation framework. This framework is more effective and recent methods than others. According to the literature study, this model includes three different levels of evaluation. The first level evaluation consists of four different axes to evaluate different feature of e-government website. The second level of evaluation includes different factors that help to evaluate each different axis and third level possesses of specific metrics to conduct the evaluation process (Panopoulou *et al.*, 2008). The four different axes of this model are;

- General characteristics
- e-Content
- E-services
- E-participation axis.

According to the Panopoulou's *et al.*, (2008) web site evaluation framework, a web site evaluation questionnaire was designed to focus all metrics used in this framework. Table 1 illustrates the complete questionnaire. This questionnaire was used to carry out this evaluation. The questionnaire included forty metric criteria. Each metric criteria was awarded between 0 and 1 score. The dichotomous metrics were awarded with 0 or 1 score. The metrics measured in nominal scales were awarded with different score between 0 and 1 based on the level of answer. The metrics measured in the nominal scales were provided

with four different standardized quantitative answers and each answer is awarded by 0.25 score. For example to evaluate public outreach of e-government website, availability of government agencies contact details was considered as one metric criterion. And this criteria was provided with four different answer such as telephone no, e-mail address, fax no and postal address. Four this criterion, e-government website was provided by 1 score (0.25x 4) because it has all four level contact information in the web site. Then total score was calculated by sum up the scores provided for each metric criterion.

Table 1: Complete evaluation questionnaire

Matrix No	Matrix Criteria	Metric Score
General characteristics axis		
	Accessibility factor	
1	Compatibility of website for all browsers and different screen size	
2	The accessibility of web pages using the WCAG 1.0 W3C standard	
3	Availability of free software downloading link for viewing online functionalities	
	Navigation factor	
4	The navigation menu available in home page	
5	Availability of links to main page in all sub-pages	
6	Availability of Navigation path	
7	Visibility of navigation menu all pages	
8	Use of different colour for links than their original text colour	
9	Unique use of interface in all page of web site(Font: colour, size and style)	
10	Availability of A-Z index or site map	
11	Availability of internal search engine	
	Multilingualism factor	
12	Availability of other langue content other than national language	
13	Level of other language content in website	
	Privacy factor	
14	Availability of privacy and security statement in web site	
15	Request for personal data in any part of web site	
	Public Outreach factor	
16	Availability of government agencies contact details	
17	Availability of webmaster e-mail address	
18	Availability of request of compliment functionality to contact elected public representatives	
19	Response time for public enquiries	
E-content axis		
	General content factor	
20	Number of available web page in web site	
21	Availability of public information content	
22	Accessibility of thematic maps	
23	Availability of link to other relevant web site	
	Specific content factor	
24	Accessibility of e-procurement services in web site	
25	Availability of vacancy announcement in web site	
26	Availability of financial and budget information in online	
	News update	

27	Frequency of web site update	
28	Frequency of local and regional news update	
29	Availability of online event calendar	
e-services axis		
	General information factor	
30	Way of the offered services organised on the web site	
31	Availability of contact details for different government departments	
32	Availability of e-mail contact detail	
33	Possibility for citizens to request for additional public service information	
	Services number and level factor	
34	Breadth and number of online service available	
e-participation axis		
	Information factor	
35	Availability of policy documents in online	
	Consultation factor	
36	Availability of e-consultation services	
	Active Participation factor	
37	Possibility for citizens to communicate through chats or e-forums	
38	Availability of online polls to citizen's participate into decision process	
39	Availability of discussion forum for a citizen to initiate a new discussion topic	
40	Possibility for citizens to provide new agenda for government agencies meetings	

3. Evaluation

The evaluation was carried out based on each axis of evaluation framework. In addition home page, department page, Sri Lanka fact page and A to Z page of official web portal were used as sample for this evaluation. Figure 1 illustrates the home page of Government web portal of Sri Lanka (www.gov.lk).

Figure 1: The home page of Government web portal of Sri Lanka

3.1 General characteristics axis

Based on the evaluation framework, general characteristics axis of official web portal was evaluated for accessibility, navigation, multilingualism, privacy and public outreach factors. Three metrics have been used to evaluate the accessibility of official web portal of Sri Lanka. They are basically compatibility of web site for all browsers and different screen, accessibility options of web site pass the WCAG 1.0 W3C standard and availability of free software downloading links.

The compatibility of web site for all browsers, different screen size was evaluated by using screen size test tool (http://www.anybrowser.com/ScreenSizeTest.html). The four sample pages were tested in this metrics and they obtained the pass grade in this test. And, it is a dichotomous metric criterion and has been awarded score of 1. The accessibility of web pages using the WCAG 1.0 W3C standard was evaluated by using four different well-recognised web accessibility-testing tools. The utilised tools are namely EvalAccess, Hera, HiSoftware® Cynthia Says™ Portal and Web Accessibility Inspector. These tools were utilised based on WCAG 1.0 W3C guidelines, (Jahankhani, 2008). Meanwhile, accessibility of each page was tested for WCAG priority level of 1, 2, 3. The four sample pages were tested for this metric criterion. According to the evaluation result, all pages were failed in the WCAG 1.0 W3C standard accessibility test. Moreover, it is a dichotomous metric criterion. Hence, metric criterion awarded score of 0. The final metric is availability of free software downloading links in the web site. Availability of this metric was checked in the all the pages of official web portal and the result was there is no free download link is available. Hence, metric awarded score of 0 as it is a dichotomous metric criterion. According to evaluation, accessibility factors of official web portal of Sri Lanka were awarded total score of 1.

There are eight metrics have been used to evaluate the navigation factor of official web portal. Based on the evaluation, the navigation menu is not visible in all the page of the web site. Thus, this metric was awarded score of 0. Further, navigation path is not available in the web site. Therefore, the score of 0 has been awarded for this metric. Moreover, other six metrics criterions are fully available in official web portal. Hence, each metric criterion was awarded by score 1. According to evaluation, navigation factor of web portal were obtained total score of 6.

Based on the framework two metrics criterion have been used to evaluate multilingualism factor of website. The two metrics are availability of other language content other than national language and level of other language content in website. In addition, these two criterions were measured in nominal scales and standardized answers were provided. The availability of other language content other than national language was evaluated based on four standardised quantitative answers. According to scoring method, this metric was awarded score of 0.25. Based on the evaluation, the whole content of web portal is available in English only. Hence, this metric was awarded by score of 1. Thus, multilingualism factor of web portal was awarded total score of 1.25.

Security and Privacy were evaluated through two metric. They were availability of privacy and security statement in web site and any request for personal data in any part of web site. Based on the evaluation, these two metrics were not available in the website portal were dichotomous metric criterions. Hence, each metric criterion was awarded score of 0. In addition, security and privacy factor of web portal was given total score of 0.

Public outreach of official web portal was evaluated through four different metrics as mentioned in research methodology. The availability of government agencies contact details was measured in nominal scale. There are four standardised answers were provided for this metrics. They were availability of telephone number, fax number, e-mail address and postal address. Based on the evaluation, the available contact details were telephone number and e-mail address. Therefore, this metric was awarded score 0.5. The availability of webmaster e-mail address was measured as dichotomous metrics. According to evaluation, webmaster e-mail address and contact phone detail is available in the web site. Hence, this factor has been awarded by score of 1.

The availability of request of compliment functionalities to contact elected public representatives was evaluated in nominal scale. The provided standard answers were availability of postal contact, availability of direct phone contact, e-mail address and availability of online forum. Based on evaluation, the available request functionalities were postal contact, direct phone contact and e-mail contact. According to scoring system, this metrics was awarded score of 0.75. The response time for public enquiries was also measured in nominal scale. Meanwhile, the provided standard answers for this metric were response with in a day, 1-2 working days, 3-4 working days and more than 4 working days. To determine the response time, there are four different enquiries had been submitted to web master and the responses were received after 5 working days. Therefore, response time was considered as more than 4 working days and score of 0.25 was awarded for this criterion based on the scoring method. At the same time, based on the evaluation, public outreach factor of web portal was awarded total score of 2.5.

3.2 E-content axis

E-content axis of web portal was evaluated through three different factors. They are general content, specific content, and news and updating factor. The evaluation result was discussed below. The general content factor of web portal was measured based on the four different metric criterions. The number of available page in the web portal was evaluated in nominal scale. The provided standard answers were; only one page, 2 -10 pages, 11- 100 pages and more than 100 pages. According to the evaluation, there were 558 pages available in official web portal of Sri Lanka. This metrics was awarded score of 1. The second metrics is availability of public information content in the web site. This metrics was also measured in nominal scale. Provided answers were; availability of organisational information, regional history information, local information and tourism information. Based on evaluation of Sri Lanka fact, government general information, democracy information, local information, education information and tourist information were available in the web site. Thus, this metric was awarded score of 1.

Other evaluated metric were accessibility of thematic (GIS) maps in the web site, which two were available. These are district map and provincial map. In addition, it is a dichotomous metric criterion and it has been awarded score of 1. The availability of link to other relevant web site was measured as a general content metric of the web site. There are many difference links available for other web sites such as links for provincial councils, Ministries, departments and other institutions. Furthermore, it is a dichotomous metric and thus it was awarded score of 1. Therefore, general content factor of web portal was awarded total score of 4.

Three metrics were used to evaluate specific content of web site. These are; accessibility of e-procurement services, availability of vacancy announcement and availability of financial information. Based on the evaluation, e-procurement service and financial information are

not available in the website. Whilst, these are dichotomous metric, therefore, each was awarded score of 0. Employment information and vacancy announcements were available in the web site. Therefore, this was awarded score of 1. Based on evaluation, specific content factor of web portal were awarded total score of 1.

Three metrics were used to evaluate news and updating factor of web site. Frequency of web site update was measured in nominal scale. The answers for this metric were every day, every week, every month and more than one month. The official web portal was frequently accessed for two. According to assessment, updating of the web portal is once a week. Therefore, this metric was awarded score of 0.5. Other evaluated metric is frequency of local and regional news update. This metric was measured in nominal scale. The standard answers were every day, 2-3 day, every week and less rarely. Based on evaluation, news section of website is not updated frequently. Score of 0.25 was awarded to this metric. The third metric is availability of online event calendar. Evaluation indicated; online event calendar was not available in the web portal and so this metric was score 0. Hence, total score of 0.75 was awarded to news and updating factor of web portal.

3.3 E-services axis

Three factors were used to evaluate E-service axis of official web portal. These factors were general information factor, available services number and level factor. Four metrics were used to evaluate this factor. The way of the offered services organised on the web portal was evaluated in nominal scale. The standard answers for this metric were organised based on department, alphabetically, content and events. This metric was awarded score 0.75.

The availability of contact details for different government departments was also measured in nominal scale. The provided answers were availability of telephone number, postal address, fax no and E-mail address. This factor was awarded score of 1. The availability of e-mail contact detail for government department was measured in nominal scale. Evaluation indicated that, only one e-mail contact is provided for each department. Hence, it was awarded score of 0.25. The fourth metric of general information factor was possibility to request for additional public service information. Based on assessment, additional information requesting facility is not available in the web portal. Hence, it was awarded score of 0. Total score of 2 was awarded to the General information factor of E-services axis.

The services number and level factor of e-Service were evaluated through breadth and number of online service available in the web portal. There was no online service available in official web portal of Sri Lanka. This factor score 0.

3.4 E-participation axis

There are three factors were used to evaluate the E-participation. They were information factor, consultation factor and active participation factor. The information factor of web site was evaluated through availability of policy documents in web portal. Further, e-consultation factor of web portal was evaluated based on availability of e-consultation services in the web portal.

And four metrics were used to evaluate active participation factor of web portal. They were possibility for citizens to communicate through chats or e-forums, availability of online polls to citizen participate into decision process, availability of discussion forum for a citizen to initiate a new discussion topic and possibility for citizens to provide new agenda

for government agencies meetings. Furthermore, all the metrics were used to evaluate e-participation axis were considered as dichotomous metric criterion. According to evaluation, there is no e-participation criterion available in the web portal. According to scoring method, total score 0 was awarded E-participation axis.

Result

According to the evaluation, official government web portal of Sri Lanka was awarded score of 18.5 out of 40 this is a 46.25 percent achievement. Table 2 present the score of each evaluation axis. Further, the percentage scoring of each axis and factors were calculated based on the assigned total metrics. For example, there are eight metrics assigned for navigation and based on evaluation this factor was scored 6. Hence, the percentage of score for navigation factor is 75% (6/8). Table 3 present the total score of each evaluation factor According to calculation all the axis scored low percentage. The e-participation axis scored very low percentage. It shows that, the web portal do not offer e-Participation opportunity to citizens.

Table 2: The score of each evaluation axis

Evaluation Axis	No of Assigned Factors	Level implementation			Total Score	Percentage
		Completely	Partially	Not Available		
General characteristics	19	9	4	6	10.75	56.58
e-Content	10	5	2	3	5.75	57.5
e-Services	5	1	2	2	2	40
e-Participation	6	0	0	6	0	0
Total	40	15	8	17	18.5	46.25

Table 3: Accumulated score of each evaluation factor

Evaluation Factor	No of Assigned Metrics	Score	Implemented percentage
Accessibility	3	1	33.33
Navigation	8	6	75.00
Multilingualism	2	1.25	62.50
Privacy	2	0	0.00
Public Outreach	4	2.5	62.50
General content	4	4	100.00
Specific content	3	1	33.33
News update	3	0.75	25.00
General information	4	2	50.00
Services number and level	1	0	0.00
Information	1	0	0.00
Consultation	1	0	0.00
Active Participation	4	0	0.00
Total Score	40	18.5	46.25

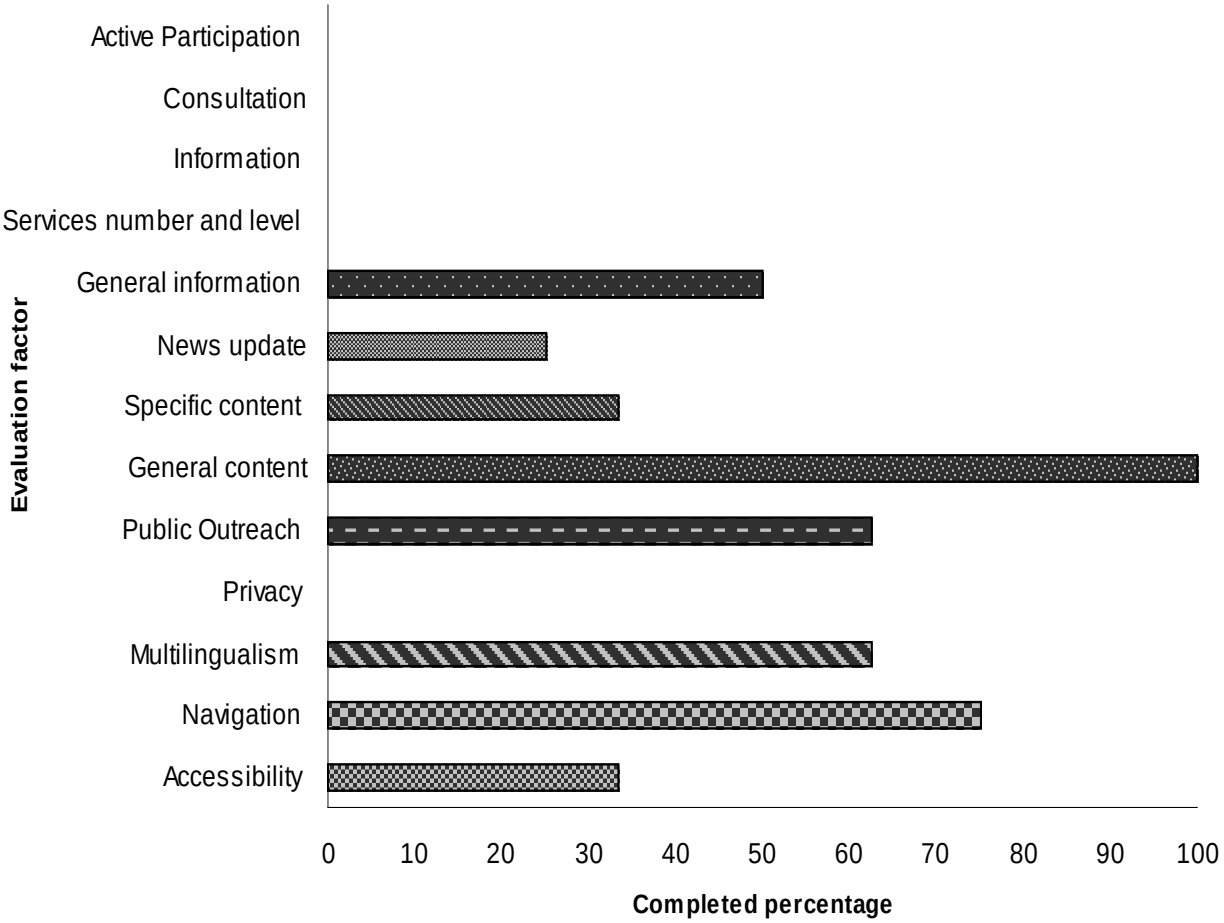

Figure 2: Factor wise implementation of official web portal

Conclusion

Information and communication technology (ICT) is a significant tool to upgrade government's administrative efficiency, transparency and service delivery. Moreover, investment in human resources, process and institutional changes, and policy reforms are prerequisite to realize the full potential benefits of ICT applications. The evaluation of official web portal indicates that although there are number good features on the website, however, there is still work to be required to make the website more effective, accessible and secure. E-participation and e- service factors also require more work. The evaluation shows evidently that government used web portal mainly for promotional and information dissemination purpose.

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