

Evaluation of the Functionality of Websites

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Abstract – This paper proposes the evaluation criteria methods for functionality of website. The functionality criteria include accessibility, broken links (errors), compatibility, search, standards and usability. These dimensions together with their comprehensive indicators and checklists can be used by web designers and developers to make websites function to its full potential.

Index terms – accessibility, broken links, compatibility, functionality, search, standards, usability

INTRODUCTION

Website development has been done at a fast pace in recent years for wide range of purposes in different domains such as education, government, museum, business, entertainment and health. There are millions of websites today but a small percentage of these websites reach for above the ground level in satisfying the user requirements and needs. Despite the fact that many websites lack the quality of satisfying their user's needs, the reliance to use websites for different purposes such as finding information, shopping online, communication with people or performing other tasks has augmented.

Moreover, existing websites in different domains have become application oriented and they are not just only document oriented anymore. So, websites are not bounded to mere information provider, it must function to its full potential for user satisfaction.

LITERATURE REVIEW

As the dependency of web services increases, the need to assess characteristics with website quality and success increases. The explosion of the web has determined the need of measurement criteria to evaluate the aspects related to the quality in use such as usability and accessibility of a web application. The objective is to make website useful, profitable, user linking and accessible [1]. An organization with a website that is difficult to use, and interact with gives a poor image on the internet. Therefore it is important for any developer to have the ability to make an assessment of the quality of their website service, in order to improve their offerings overtime and benchmark against competitions and the best practices in any industry [2]. As per Google survey 2019, 2 seconds is the threshold for e-commerce website acceptability. 53% of visitors are abandoned if a mobile site takes longer than 3 seconds to load. 10 point metric evaluation was proposed for improving usability of website design using w3c guidelines [3]. Downloading time depends on varies with components such as multimedia, document size, program size and so on and 10 point metric scale was proposed to evaluate the downloading time performance [4]. Considering the website as an important

application oriented [5] proposed the evaluation framework for assessing the quality of websites.

Website designing was easy due to easy coding of Html, browser tolerability, etc., but website quality was not considering which is essential for better functionality to accomplish the requirement for which website was designed.

METHODOLOGY:

In evaluating the functionality of websites, various parameters were evaluated. The quality assurance parameters include errors, accessibility, compatibility, privacy, search standards according w3c guidelines and usability aspects of website. To analyse all the parameters, site sorter tool was used. Site sorter is a one – click website testing tool to analyze an entire website. Each page is checked against standards based checkpoints. The checkpoints are:

Accessibility: Check WCAG (Web Content Accessibility Guidelines) and section 508 guidelines against many file types, flashing Gif's, untagged pdf's.

Broken links: Check for broken links and spelling errors.

Compatibility: Check for Html, Script and image fonts that don't work in common browser.

Search Engine Optimization: Check Google and Bing website guidelines.

Privacy: Check for compliance with EV and US law.

Web Standards: Validation Html and CSS.

Usability: Check against usability.gov guidelines.

The tool accepts URL address of a website and processes the first 100 web pages in the website. The output report demonstrates the number of pages that suffer with quality issues due to lack of accessibility, lack of compatibility, lack of privacy, lack of search facilities, lack of standards and lack of usability factors. By analysing all the above criteria, the tool also provides the total quality of website. The figure 1 shows the analysis of functionality of website.

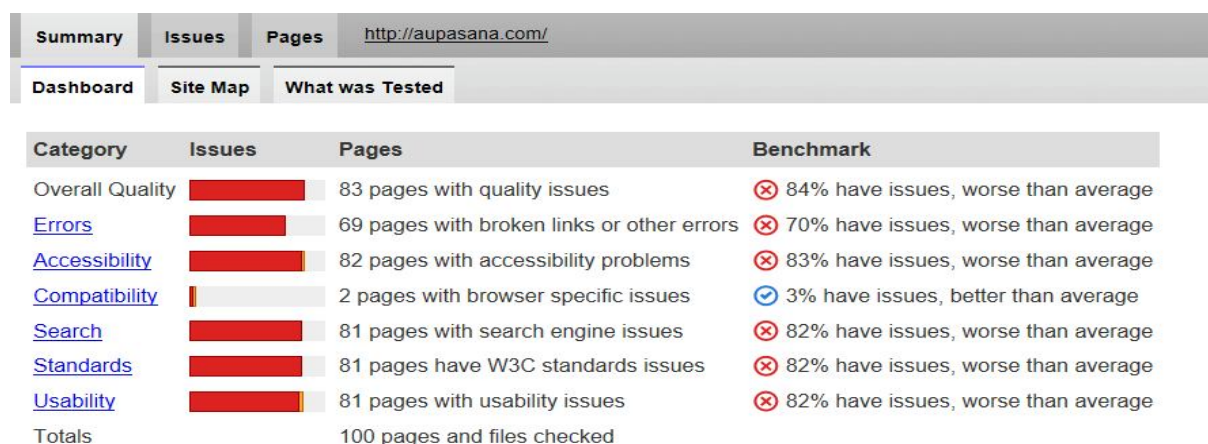


Figure 1. Analysis of Functionality of website.

Taking consideration of overall quality, following methodology is proposed to evaluate the functionality of websites.

	>=80 pages have quality issues	- very poor	
	>=70 pages have quality issues	-poor	
	>=60 pages have quality issues	-below average	
Functionality =	>=50 pages have quality issues	- average	------(1)
	>=40 pages have quality issues	-above average	
	>=20 pages have quality issues	-good	
	>=0 pages have quality issues	-very good	

EVALUATION:

The functionality evaluation was conducted on 15 websites related to Sanskrit language using methodology stated in above section and evaluation results shown in Table 1.

s.no	Websites	No. Of pages with page Faults (per 100 pages)	functionality
1	Sanskrit.samskrutam.com	39	Above average
2	www.sanskritworld.in	94	Very poor
3	www.learnsanskrit.org	85	Very poor
4	www.TheSanskritLanguage.com	43	Above average
5	Sanskrit.safire.com	71	Poor
6	Sanskrittutorial.in	64	Below average
7	SpokenSanskrit.org	9	Very good
8	www.digitalsanskritguru.com	58	Average
9	www.gitasupersite.iitk.ac.in	57	Average
10	Aupasana.com	83	Very poor
11	Rajsanskrit.nic.in	68	Below average
12	www.vedabhoomi.org	23	Good
13	Advaitasharada.sringeri.net	75	Poor
14	www.sanskritebooks.org	38	Good
15	www.pradakshinam.com	36	Good

Table 1. Functionality evaluation of Sanskrit language related websites.

The detailed checkpoints that are evaluated for each criterion taken into consideration are figured in following figures 2, 3, 4, 5, 6, and 7.

Accessibility	
JAWS Screen Reader Compatibility	Not Checked
NVDA Screen Reader Compatibility	Not Checked
VoiceOver Screen Reader Compatibility	Not Checked
PDF/UA - Matterhorn Protocol 1.02	Not Checked
Section 508 of the Rehabilitation Act - 65 FR 80499 (2000)	Not Checked
Section 508 of the Rehabilitation Act - 82 FR 5790 (2017)	✓ Checked
Web Content Accessibility Guidelines 1.0 (WCAG 1.0 - 1999)	Not Checked
Web Content Accessibility Guidelines 2.0 (WCAG 2.0 - 2008)	✓ Checked
Web Content Accessibility Guidelines 2.1 (WCAG 2.1 - 2018)	Not Checked

Figure 2. Accessibility checklists

Browser Compatibility	
Android Browser Compatibility	✓ Checked
Blackberry Browser Compatibility	Not Checked
Chrome Browser Compatibility	✓ Checked latest version
Edge Browser Compatibility	✓ Checked latest version
Internet Explorer Browser Compatibility	✓ Checked from version 11
Firefox Browser Compatibility	✓ Checked latest version
Opera Browser Compatibility	✓ Checked latest version
Safari Browser Compatibility	✓ Checked latest version
iPhone/iPad Browser Compatibility	✓ Checked from version 9

Figure 3. Compatibility checklists

Errors	
Server Configuration	✓ Checked
Content Issues	✓ Checked - English (US) spelling
Blocked Links	✓ Checked
User Defined Errors	✓ Checked
HTTP Status Codes	✓ Checked
IETF RFCs	✓ Checked
Script Errors	✓ Checked

Figure 4. Errors checklists

Search Engine Guidelines	
Google Webmaster Guidelines	✓ Checked
Google SEO Starter Guide	✓ Checked
Google Blogs and Webmaster Videos	✓ Checked
Bing Webmaster Guidelines	✓ Checked
SEO Best Practice - General	✓ Checked
Robots.txt Standard	✓ Checked
Yahoo Webmaster Guidelines	✓ Checked

Figure 5. Search checklists

Usability	
Readability Guidelines	✓ Checked
Usability.gov: Research-Based Web Design & Usability Guidelines	✓ Checked
W3C Usability Best Practices	✓ Checked

Figure 6. Usability checklists

Web Standards	
W3C CSS Validation	✓ Checked
W3C Deprecated Features	✓ Checked
W3C HTML Validation	✓ Checked
W3C HTML5	✓ Checked

Figure 7. Web standards checklists

Functionality evaluation conducted on 15 websites that are related to Sanskrit language out of which only one website is very good, three websites are good, two websites are above average, two websites are average, two websites are below average, two websites are poor and three websites are very poor.

CONCLUSION:

The theme of paper is to analyse the overall criteria of website and thereby check whether the website is functional up to its limit or not. In our inputs, websites related to Sanskrit language 70% of the websites want to review their quality issues to improve their websites functionality.

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