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Content Analysis of Websites of Health Ministries in ECOWAS English Speaking Countries

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Abstract - *Recently, websites have become the face of governments' information and service delivery to citizens. Unfortunately, in Africa and so many developing countries, eGovernment with respect to service delivery has remained at mere web presence and information dissemination level. This paper therefore, evaluated the websites of the Ministries of Health of the 5 West African (ECOWAS) English speaking countries, using Website Attribute Evaluation System WAES. From the evaluation, all the websites are at a similar level of development which is in agreement with the United Nations 2018 eGoverment Development Index UNEGDI.*

Key Words: **Web Engineering, Content Analysis, Website Usability, ECOWAS, eGovernment**

1. INTRODUCTION

Contextually, E-government may simply be viewed as the delivery of Government wide services electronically. However it has varied definitions due to its varied and overarching application by multiple stakeholders which includes researchers and specialists. Each stakeholder coins a definition within the context of the philosophy of services to be delivered. For example, the World Bank defines eGovernment as the "use of information technologies (such as Wide Area Networks, the Internet, and mobile computing) by government agencies that have the ability to transform relations with citizens, businesses, and other arms of government." (1) The eGovernment for Development Information Exchange Project a Commonwealth Telecommunications Organization and DFID Co-Sponsored project defines eGovernment as *"the use of information and communication technologies (ICTs) to improve the activities of public sector organizations" (2).* Similarly, the United Nations refers to eGovernment as the "*use of information and communication technologies (ICT) - such as Wide Area Networks, the Internet, and mobile computing - by government agencies*" (3). While OECD noted that Electronic Government refers to the use of information and communication technologies, and particularly the Internet, as a tool to achieve better government (4). From the above definitions it is evident that there is a point of convergence which alludes that eGovernment uses ICTs to offer citizens, inter/intra governmental organizations', civil societies, businesses e.t.c Government wide services.

From the definitions above, there is an obvious convergence of purpose, which is the deliberate, effective and efficient delivery of services to the citizens. Developing countries, especially majority of African countries have been adjudged to be at the developing stages of eGovernment and by extension, the delivery of efficient and effective eServices to the citizen.

The Economic Community of West African States, ECOWAS was formed in May, 1975 and consists of 15 countries with an estimated 5,114,162 Sq. Km and a population of about 349 Million. Though, initially created as an economic bloc that will engender trade, economic, infrastructural development etc, over the years, the directions and nature of the organizations has evolved from economic, trade to peace keeping, universal infrastructural development and collaboration in several sectors. For example, there is now a West African Economic and Monetary Union, West African Monetary Zone, ECOWAS Custom Union etc. Clearly the relationship has metamorphosed from cooperation to collaboration just like the EEC to EU. In this regards, several sectors such as health, telecommunication, banking etc are synchronizing with their counterparts in other countries.

Therefore, this paper seeks to determine the current state of contents on the national health Ministry's websites of English speaking countries in the Economic Community of West African States ECOWAS. Out of the 15 countries in the ECOWAS there are Five English speaking countries. Hence, this survey will be conducted on the 5 English speaking countries. During the data collection period, the Sierra Leone Ministry of health website was unresponsive so we decided to exclude it from the analysis. The research aim is to find out the variation of contents on the health Ministry's websites in the English Speaking countries in the ECOWAS as well as the services. The rest of the paper is structured as viz; section 2 introduces website evaluation methodologies as well as the indicators of content analysis, section 3, shows the steps in the methodology followed for the collection and analysis of results, section 4 shows the results obtained, section 5 is the discussion of results and section 6 presents the conclusion and section 7 further research accordingly.

2. Website and Web Evaluation Methods

Due to the variety and complexity of the continuously interacting elements of a web or website system, it is

increasing becoming difficult to find a specific engineering approach in the development process in building of web systems (5). This phenomenon often leads to adhoc design processes which often lead to faulty projects. (6) Found that, the same type of errors are often found in adhoc development processes. This inadequacy has served as one of the major stimulants to the emergence to the field of Web Engineering. The field of Web Engineering, even though, emerging and therefore evolving, it has thus far tried to address some of the challenges faced with the development of web and website applications (7), by inculcating systematic and structural approaches to the development, maintenance and operations of websites and web applications.

The field of Web Engineering is mainly concerned with the measurement of key elements of websites or web applications such as web usability, functionality, web quality, web validation etc. Web Engineering is also applied to the development of quantitative metrics, development of assessment methodologies and models of websites and web applications (8). Web applications and website evaluation as one of the fields of Web Engineering, has equally undergone significantly conflicting researches regarding the demarcation between web application and website evaluation (9). Other areas of conflict with respect to Website evaluation is the focus of evaluations i.e is the focus for ranking, redesign, traffic statistics, type and focus of website or application etc. Therefore the proliferation of several evaluation methodologies accounts for the difficulty encountered in standardization of the evaluation framework. For purpose of this work, we adopt the website attribute Evaluation System WAES.

2.1 Content Analysis

Content analysis is used by researchers as a research tool in establishing the meanings and relationships between words used in a context. This is further used to draw an interpretation of the messages and concepts that these words are trying to convey. The messages or concepts are influenced by culture, intended audience and the time or moment. Common, formal examples of words organized into messages and concepts are; books often organized into chapters, topics subjects, journals, newspaper articles, conversations (both formal and informal), speeches by prominent people of influence (or just about anyone), interviews etc

Content analysis is carried out by a process called coding. In this process, the content is assigned into different categories for easy management. These categories are;

a. Words
b. Words sense
c. Phrase
d. Sentence
e. Theme

(10) Used basic method to establish the categories above at different levels to do a content analysis. To conduct a content analysis on any such text, the text is coded, or broken down, of variety. There are basically 2 main methods in conducting content analysis viz;

a. Conceptual analysis
b. Relationship analysis

Despite the impracticality of execution of content analysis early in the 1900s, it was still conducted using mainframe computers, with data collected from human coders punched on the mainframe computers punch cards. This process is often replete with many errors and in most circumstances, takes thousands of people to perform the simplest of the content analysis processes. By 1940s content analysis has become a well-established research methodology, with many researchers relaying on its robustness to conduct research. Initial usage includes the use of word counts and frequency of occurrence analysis, however the 1950s witness the deployment of sophisticated methodologies that analyses concepts and semantic relationships in the content analysis (11). Later and even more recent applications conduct analysis of;

a. Cultural or historical concepts
b. Effective concepts
c. Linguistics sophistication
d. Impacts analysis
e. Cognitive concepts
f. Social concepts

Presently, content analysis is applied to practically any field of study or inquiry, from ethnography, marketing, communication (written and recorded), cognitive sciences, gender studies, social and political studies etc. content analysis has become a very important field of artificial intelligence as it is used to band psycholinguistics.

2.2 Benefits of Content Analysis

(12) Highlighted the underlisted as some of the most import benefits or uses of content analysis.

a. It is used to outline the differences and nuances of international communication

b. In an era of "fake news" content analysis is used in the detection of fake news and or propaganda.

c. It can be used to categorize trends, focus and intent of communications of either a group, or individuals. This group involves institutions like government or data outlets.

d. It can be used to assess behavioural or attitudinal reactions or impact of specified communications.

e. It can be used to establish the state of emotions and psychology of either individuals or individuals as defined earlier.

2.3 Website Content Analysis Evaluation Criteria

Websites by their nature are difficult to understand and measure, as such many surveys and researches utilizing different methodologies have been used at varying levels. With websites deployed to serve different purposes, several evaluation criteria have been proposed e.g evaluation of marketing, information dissemination, service provision, promotion activities etc (13). However, a universal demand for websites is to be successful. Consequently, the following as enumerated by (14) are some of the factors that determine success of websites.

a. The website should be able to clearly communicate its strategies and objectives to the visitors in an understandable manner

b. When developing a website, a thorough audience need analysis should be conducted, so that the target audience will be satisfied by the offerings of the website

c. User interaction is critical to website usability, as such, features that engender and enhance user-website interaction are very essential.

d. Ease of navigation aids website usability, as such, structures that support navigation should be utilized in the website

e. Website functionality is vital to the ease of use of a website and by extension its success, as such, functional components added to a website should be easy to use.

f. Websites aesthetic appeal is also vital to its components; therefore, websites should be designed to be appealing and attractive.

Other factors that determine the dimensions of information structure such as gramma, style, colors, fonts, size, text, text style etc must be used in such a way that they are not only appealing but relevant, credible and accurate. These factors all add to the value of the information presented. Government websites especially, are expected to provide accurate information particularly in developing countries where majority of government websites are at the publishing stage in the United Nations eGovernment Development Index UNEGDI (15).

Customer conversion is essential to most websites but it's more important in commercial websites, although, even not-for-profit websites like government websites need citizens to return to their individual websites for information. Therefore, providing high value content is essential to customer conversion and citizen engagement and or retention, therefore they are used as dimensions for a successful website.

Freshness of content is essential to website success. This attribute of success will further add to the credibility of a website. Furthermore, this interface with customer retention, because customers/citizens will be encouraged to return to a website if they know that, there is something new to either see, learn or buy on the website.

Most sites use promotional tools to gain visibility, as such, websites that use promotional tools either technologically inclined tools or traditional tools tend to be more successful. Technological tools include adworks, adsense, search engine optimization SEO etc. and traditional tools include conventional advertising and or internet marketing.

Components to be measured are;

1. Information on the website
2. Presentation of the information on the website

The information on the website is represented by the following

2.3.1 Information about the organization

This is contained in form of aims of the organization, objectives of the organization, vision of the organization, information about the law establishing the organization, mission of the organization, names of the principal officers of the organization, organizational wide contact details, official contact details of principal officers, links to sub agencies and or departments, agency wide organogram, detail information about the activities of the organization, detailed information about the activities of each of the organization, policy documents.

2.3.2 Presentation of the information

This is mainly concerned with the technology of how the information is presented on the websites. Attributes are typically; design, rate of update, speed of page upload and navigation. These attributes are measured by the following;

Design: Page Layout, Multimedia, Design of headings and titles.

Page Layout: Organization of the page, Consistency of clickable Items on the page, Hierarchical appearance of items on the page, Alignment of the items on the page.

Multimedia: Visibility and labels on clickable items, Consistency on the position of logo on each page, Introduction of animation or videos, Latency of downloadable items measured on time it takes to download items.

Design of Headings and Titles: Distinctness of different categories of Items, Headings tag analysis, Titles tag analysis.

Rate of Update: This measures how often a website is being updated. For this paper, we measure within a window period of 1 month i.e from 23rd December, 2018 to 23 January, 2019.

Navigation: The internal links, External links, Redundant links and unimplemented links

3. METHODOLOGY

The methodology involves the use of 5 MSc students and the authors to streamline the attributes to be measured after an extensive literature review.

A list of the enumerated attributes was given to each evaluator for independent evaluation.

As highlighted in section above, the attributes already enumerated in the section will be evaluated.

The data collected was recorded in MS Excel and used to generate results in the following section.

4. RESULTS

Table -1: Variation of Information on Website

Country	Ghana	Nigeria	Liberia	Gambia
Aims	1	1	1	1
Objectives of the Organization	1	1	1	1
Vision Statement	1	1	1	1
Establishing Law	1	1	1	1
Mission Statement	1	1	1	1
Names of Principal Officials	1	1	1	0.5
Links to sub-Agencies	1	1	1	1
Organogram/Organizational Chart	0	0	1	1
Information About The Activities	1	1	1	1
Policy Documents	1	1	1	1

Table -2: Variation of Page Layout on Website

Country	Ghana	Nigeria	Liberia	Gambia
Organization on Page	1	1	1	1
Consistency on Clickable Items	1	1	1	1
Hierarchic Appearance of Items	1	1	1	1
Alignment of Items	1	1	1	1
Links Distinctness	1	1	1	1

Table -3: Variation of Multimedia Elements

Country	Ghana	Nigeria	Liberia	Gambia
Visibility of Labels and Clickable Items	1	1	1	1
Consistency of Position of Logo	1	1	1	1
Introduction to Animation	1	1	1	1
Latency of Downloadable Items	0.9	0.8	0.9	0.9

Table -4: Variation of Design of Headings and Titles

Country	Ghana	Nigeria	Liberia	Gambia
Distinctness of Different Categories of Items	1	1	1	1
Headings Analysis	1	1	1	1
Title Analysis	1	1	1	1

5. DISCUSSION OF RESULTS

As highlighted earlier, the authors could not access the Sierra Leonean Ministry of Health, as such it was eliminated from the analysis. From Table 1: Variation of Information on website, it can be clearly seen that, all the 4 Ministries of health evaluated have significant information on their websites. From the itemized results collected, these Ministries have all clearly stated aims, objectives, mission statements, vision statements. Also, with the exception of the Ministry of Health of Gambia, all the other Ministries have the Names of the principal officers. The Gambian Ministry of health has the Name of the Minister alone and not any other principal officer. This is why the point 0.5 was written in the entry for the Gambian Ministry of health.

All the 4 evaluated Ministries have links to other sub – agencies that are related to the Ministries. In the case of Nigeria, the Federal Ministry of Health has sub-agencies like National Program on Immunization NPI, National Action Committee on Aids NACA etc all have links to their websites on the main Ministries website. The Ministry of

health in Liberia has links to foreign donor organizations. Furthermore, all the 4 Ministries evaluated had sufficient information about their activities on the websites. The information displayed on the websites ranges from information about events, such as visits to hospitals, conferences etc. With respect to policy documents, again, all the 4 ministries had policy documents displayed and are downloadable. For example, the ministry of health in Liberia had policy documents that pertain to the Ebola outbreak. In Nigeria, the Nigerian Ministry of Health has a link to registered hospitals and health centers in the country. They also have a link to a health information system, which adds an interesting dimension to the evaluation. Interestingly, it is only the Liberian Ministry of health that has an organogram or organizational chart displayed on its website. This clearly is representational of the sophistication of the Liberian Ministry of health.

The second component of content as earlier highlighted is the presentation of the content, which is evaluated based on the Layout of the Page arrangement, organization and design of multimedia elements of the website. Others are the arrangement, design and placement of the titles, headings and the navigating elements of the website.

An evaluation of variation of the Page Layout of the 4 health Ministries shows uniformity in the page layout. This design attribute as earlier highlighted checks for the consistency of the organization on the page i.e if the clickable items are uniform and consistent in design. This element is especially important because it adds to the usability of the website. Other subtle variants of the Page Layout elements are the consistency in the hierarchic appearance of the page items and the alignment of the items.

Another page presentation element is the variation of the multimedia elements. From this element, the visibility of labels and clickable items are uniform for all the 4 evaluated Ministries. Additionally, all the Ministries have visible government logo and are positioned in a consistent manner throughout all the webpages of the website. However, the downloading latency varies with all the Ministries, with Nigerian Ministry of health having the slowest. The other 3, i.e Liberia, Ghana and Gambia all have similar values. A feature that adds to a websites usability, especially as it patterns animation and videos, is to have an introductory text for the videos and in some circumstances show the size of the video in megabytes. This is especially good for developing countries, because data services in such countries are often slow and expensive. Therefore, having an introductory note to the video and size of the file will aid a would-be-user to decide if he wants to download the video or not.

With respect to links within the context of information presentation, internal links, redundant links, unimplemented links and external links are evaluated. This is important because it adds to the reliability and reachability of the website. Classical example is an unimplemented link will affect the websites reputation negatively, so also a redundant link will have similar effect on a website. On the other hand, the internal and external links shows the extent to which the organization is willing to allow an individual have access to the organizational structure. Effectively, this can be quantified as a measure of transparency.

6. CONCLUSION

From the results obtained, it can be seen that, almost all the websites of the Ministries evaluated are on the same level. This is in agreement with the United Nations eGovernment Development Index UNEGDI (UNeGDI survey, 2018) (15) for all the countries evaluated. For example, Ghana is 0.5390, Nigeria is 0.3807, Gambia is 0.2958, Liberia is 0.2737 and Sierra Leone is 0.2717. This is in correlation with our evaluation, where Ghana Ministries of Health is apparently the most developed. However, Liberian Ministry of Health website, despite the low score in the UNeGDI has shown some advanced features and some level of sophistication. This may not be unconnected with the recent Ebola crisis in the country that attracted so many International organizations and with the Liberian Ministry of Health being the focal point of the crisis; the website has been boosted to meet up with the needs of the international support community.

7. FURTHER RESEARCH

The evaluation adopted the Website Attribute Evaluation System WAES methodology in its evaluation, which like other methodologies has its flaws. Therefore, more sophisticated methods that measure quality of the website such as Website Quality Evaluation Methodology WebQEM can be utilized for the analysis. Furthermore, it will be worth a while to undertake a comparative analysis of the Ministries websites with other Ministries in the country just to see the level of the development of the websites

8. REFERENCE

1) http://go.worldbank.org/M1JHE0Z280 Retrieved: 2019/01/14

2) http://www.egov4dev.org/success/definitions.shtml: Retrieved: 2019/01/14

3) http://www.unpan.org : 2015/08/14

4) (OECD, 2003): Retrieved: 2015/08/14

5) Ahmad, R., Li, Z., & Azam, F. (2005, September). Web engineering: a new emerging discipline. In Proceedings of the IEEE Symposium on Emerging Technologies, 2005. (pp. 445-450). IEEE.

6) Nielsen, J. (2011). Top 10 mistakes in web design. Nielsen Norman Group.

7) Deshpande, Y., Murugesan, S., Ginige, A., Hansen, S., Schwabe, D., Gaedke, M., & White, B. (2003). Web engineering. arXiv preprint cs/0306108.

8) Kumar, S., & Sangwan, S. (2011). Adapting the software engineering process to web engineering process. International Journal of Computing and Business Research, 2(1), 42-63.

9) Zahran, D. I., Al-Nuaim, H. A., Rutter, M. J., & Benyon, D. (2014). A comparative approach to web evaluation and website evaluation methods. International Journal of Public Information Systems, 10(1).

10) Palmquist, M. E., Carley, K. M., & Dale, T. A. (1997). Two applications of automated text analysis: Analyzing literary and non-literary texts. Text analysis for the social sciences: Methods for drawing statistical inferences from texts and transcripts, 171-189.

11) Pratt, C. A., & Pratt, C. B. (1995). Comparative content analysis of food and nutrition advertisements in Ebony, Essence, and Ladies' Home Journal. Journal of Nutrition Education, 27(1), 11-17.

12) Zollars, C. (1994). The perils of periodical indexes: Some problems in constructing samples for content analysis and culture indicators research. Communication Research, 21(6), 698-716.

13) Barwise, P., & Farley, J. U. (2004). Marketing metrics:: Status of six metrics in five countries. European Management Journal, 22(3), 257-262.

14) Liu, C., & Arnett, K. P. (2000). Exploring the factors associated with Web site success in the context of electronic commerce. Information & management, 38(1), 23-33.

15) UNPAN, U. (2018). e-Government Survey 2016. Leveraging E-government at a Time of Financial and Economic Crisis, New York: UNPAN