Evaluation of University Teaching Hospital Websites in Nigeria

Shakirat.O.Raji\textsuperscript{a, b},* Murni Mahmud\textsuperscript{a} and Adamu Abubakr\textsuperscript{b}

\textsuperscript{a}Human Centered Design Group (HCDG), Department of Information Systems, Kulliyah of Information and Communication Technology, International Islamic University; Malaysia
\textsuperscript{b}Intelligent Environment Research Group (INTEG), Department of Information Systems, International Islamic University; Malaysia

Abstract

Hospital Websites could be used as a medium to enhance hospital services to the public through better design and intense delivery of content. These Websites are good sources of reference for general information about the hospital and thus can be used to empower users to learn about health, diseases and medication. The clinicians and specialists at the hospital could share and leverage their knowledge as well as provide the content about illness and their prevention. Generally, university teaching hospitals, which are government hospitals attached to universities, are centers for future clinicians and academics to learn and practice their knowledge and skills. It is a great source of medical knowledge that can be shared with the members of public, which can be realized through Hospital Websites. Websites could facilitate in creating and improving their presence and interactive communication practices between clinicians with patients and public. This paper presents the result of evaluation of selected University Teaching Hospital Websites (UTHW) selected from three main regions of Nigeria. The Usability and User Experience of the Hospital Websites were evaluated with the aim to provide better understanding of the design features and contents of the Hospital Websites that can offer positive experience and empower the users. Users who participated in the evaluation were given 6 tasks to locate and find specified information in the websites based on 10 Usability heuristics contained in the questionnaire in order to gather the users’ opinion about the websites. The accessibility and availability were also evaluated and the findings indicated each website has their own strengths and weakness that can be capitalized on for proposing guidelines for better design of Hospital Websites.

© 2013 The Authors Published by Elsevier Ltd. Open access under CC BY-NC-ND license.
Selection and/or peer-review under responsibility of SCIKA – Association for Promotion and Dissemination of Scientific Knowledge
Keywords: Empowerment; Evaluation; Hospital Websites; Usability; User Experience

*Corresponding Author.
E-mail address: peacefultosin@hotmail.com
1. Introduction

Information Technology (IT) has the potential to improve the quality, safety and efficiency of Healthcare, thus, the advent of Hospital Websites. The growth of these accessible and inexpensive online sources of information, compounded by shortages of general health practitioners and time constraints experienced by patients during consultations have led to patients’ increased reliance on the internet for information and advice on medical topics Anderson et al. [1].

To date, hospitals are turning towards the internet and develop their own web presence Patsioura et al. [2]. The rapid of computing has made effective human-computer interaction essential. Increased attention to Usability is also driven by competitive pressures for greater productivity, the need to reduce frustration. As computing effects more aspects of our lives, the need of usable systems/websites becomes even more important.

Internet-based consumer services provided through hospital websites are necessary to improve relationship management, citizen’s convenience and patient care. Many evaluation instruments on hospital websites focus on Information content and communication aspects. Many patients access the Internet for comprehensive hospital information and hospital selection. Medical expertise is not the only selection criterion for those seeking medical help; care, additional services and trust, similarly, an appealing atmosphere in a clinic also play a role. Wendland et al. [3]. The Internet is becoming a more popular way to deliver and obtain important health information, with more than 1.0 million Internet subscribers in Nigeria; it is not surprising that more people are going online in search of health information. But there is a lack of research detailing usability testing of these Hospital Websites.

According to Nielsen [4], Usability “applies to all aspects of a system with which a human might interact”. An evaluation of the usability of a system involves the implementation of a variety of methods that examine how users interact with the system and assess whether the system’s performance is acceptable. It is imperative that hospital websites conduct usability testing to examine whether their users can effectively and efficiently complete required tasks. The objective of this study is to evaluate the Usability and User Experience of selected Hospital Websites in Nigeria.

2. Methods

This study conducted usability testing of three selected Hospital Websites around Nigeria to inform adjustments and to identify common usability themes that should be adjusted by organizations delivering or maintaining hospital websites.

A combination of questionnaires and Interview were implemented during the usability testing sessions to gather data from users while completing tasks on the three selected websites. Techniques included performance measures (Time taken), direct observations (participants observation) and subjective user preferences. Hinchliffe et al.[5].
Table 1: Usability Testing Evaluation Criteria

<table>
<thead>
<tr>
<th>Usability Themes</th>
<th>Accessibility Themes</th>
<th>Availability Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visibility</td>
<td>Simplicity</td>
<td>Availability 24/7, 7 days/week, 365/year</td>
</tr>
<tr>
<td>Learnability</td>
<td>Easy location of Address</td>
<td></td>
</tr>
<tr>
<td>Navigation</td>
<td>Memorability</td>
<td></td>
</tr>
<tr>
<td>Flexibility and Efficiency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aesthetic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recovery from error</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Help and Documentation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adapted from Nielsen [4].

2.1. Users

A sample of users was involved in the Usability testing sessions. Each user was recruited at the time of each testing session. Research has shown that Usability testing with five users will reveal 85% of Usability problems. Nielsen [4] All participants volunteered and no incentive was provided for their participation except some light refreshments. All participants gave written consent and also Nigerians studying in International Islamic University, Malaysia (IIUM) were recruited.

2.2. Study Design

This research study involved conducting Usability testing pre and Post modifications to identify problems that should be addressed and then examine the effectiveness of the corresponding adjustments and to identify themes relating to website Usability.

2.3. Usability Testing Session

The usability testing was conducted in the Human-Centered Design Research Laboratory at the International Islamic University to Standardize Internet Speed. Users were asked to complete a set of pre-specified tasks using the selected hospital websites namely

1. Ahmadu Bello University teaching Hospital, Zaria, Kaduna
2. The Obafemi Awolowo University Teaching Hospital complex, ile-ife, Osun
3. University Teaching Hospital, Ozalla, Enugu.

Each user was assigned a group ranging from A-C. Six tasks were selected as being representative of common activities in the use of the three selected Hospital Websites. Each user was studied in an individual session and all sessions were video tape recorded. Users were informed of the nature of the research.

Table 2. Various tasks asked for the three selected Websites

<table>
<thead>
<tr>
<th>Task 1</th>
<th>Task 2</th>
<th>Task 3</th>
<th>Task 4</th>
<th>Task 5</th>
<th>Task 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locate Anesthesia department of the three</td>
<td>Find a consultant in family Medicine in</td>
<td>Find the location/Address of each Hospital</td>
<td>Find the map and direction of each Hospital</td>
<td>Locate “find a doctor” in each Website</td>
<td>Locate “our services Logo” in each Website</td>
</tr>
<tr>
<td>teaching Hospital Websites</td>
<td>each Hospital website</td>
<td>from the Website</td>
<td>and write the URL respectively</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Table 3. Order of Assessment of Selected Websites by the Participants

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ahmadu Bello University Teaching Hospital</td>
<td>The Obafemi Awolowo University Teaching Hospital Complex</td>
<td>University Teaching Hospital. Ozalla, Enugu</td>
</tr>
<tr>
<td>The Obafemi Awolowo University Teaching Hospital Complex</td>
<td>University Teaching Hospital. Ozalla, Enugu</td>
<td>The Obafemi Awolowo University Teaching Hospital Complex</td>
</tr>
<tr>
<td>University Teaching Hospital. Ozalla, Enugu</td>
<td>Ahmadu Bello University Teaching Hospital</td>
<td>Ahmadu Bello University Teaching Hospital</td>
</tr>
</tbody>
</table>

2.4. Data Analysis

All participants were exposed to the same usability tasks before interviewing. All participants had access to the website during the interviewing section in order to explain their insights. The analysis was carried out according to the classification of the selected Hospital Websites according to the order of assessment by the participant.

3. Results and Discussion

3.1. Demographics of Participants.

Table 4 below shows the demographics of the participants based on selected variables (age, Gender, Ethnicity, Education, Computer Experience and Internet Experience respectively. Nine Participants were recruited.

The mean Age for the participants range between 32-39 years which indicates that the participants are matured individuals who supposed to be well familiar with Hospital Websites. However, the gender distribution shows that the participants were predominantly male and by ethnicity, ‘Yoruba’. The participants were drawn mainly from postgraduate students available in the sample are. Thus, 44.4% approximately 45% were Ph.D. candidates while 55% (approx.) were master’s degree. The computer and internet experience of the Participants rated as fairly high since most of them responded they spend more than 6hrs with their computer as well as Internet a day. The pilot study was conducted on December 25, 2012. Regular internet users were recruited through emails. Refreshments were served.

Table 4. Demographics of Participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean age)</td>
<td>38</td>
<td>39</td>
<td>32</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>Male</td>
<td>Male</td>
</tr>
<tr>
<td>Ethnicity (Igbo, Yoruba, Hausa)</td>
<td>Yoruba</td>
<td>Yoruba</td>
<td>Yoruba</td>
</tr>
<tr>
<td>Education (High School, Bachelor, Masters Degree, Doctoral Degree)</td>
<td>1 Masters and 2 Ph.D.</td>
<td>2 Masters and 1 Ph.D.</td>
<td>2 Masters and 1 Ph.D.</td>
</tr>
<tr>
<td>Computer Experience</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Internet Experience</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>
3.2. Selected Teaching Hospital Websites

The selected teaching hospitals have different designs and features of their websites which distinctly vary from one another. This further assists our strength of our assessment. Furthermore, the hospital websites were based on distinct geographical and demographic distribution of Nigeria (http://www.nigeriatoday.com/basic_facts_about_nigeria.htm).

The Hospital Websites portals are:
1. Ahmadu Bello university teaching hospital: www.abuth.org
2. The Obafemi Awolowo University Teaching Hospital Complex: www.oauthc.com
3. University Teaching Hospital, Enugu: www.unthenengu.org

Fig. 1: Snapshot of the homepage Ahmadu Bello University Teaching Hospital

Fig. 2. Snapshot of the homepage of The Obafemi Awolowo University Teaching Hospitals Complex
Each participant was interviewed at the end of each usability testing to find out the User Experience. Some of the opinions of participants are below:

Participant A: The link of the OAUTHC is the best of the three but University Teaching hospital, Enugu is the most user-friendly

Participant B: I think Ahmadu Bello Website needs some improvement. OAUTHC lacks location and direction

Participant C: Of all the three websites, University teaching Hospital, Enugu is the most user-friendly amongst them.

Generally, all participants from the order of accessment (group A-C) agreed that OAUTHC has the best navigation followed by University teaching hospital, Enugu. This then shows that Ahmadu Bello Teaching Hospital has the worst navigation and as such Ahmadu Bello Teaching Hospital needs improvement. The responses of the participants based on Task 3 and Task 4 respectively indicate that OAUTHC lacks location and direction.

4. Conclusion

The Internet has really transformed the way many health seekers find health information. This study examined the usability and user experience of the selected hospital teaching websites. The selected websites represent the major ethnic groups. The participants who were mainly postgraduate students have high computer and Internet literacy. The result of the study shows that Enugu is the most users friendly while Ahmadu Bello University Teaching Hospital is least user-friendly. Above all, the three selected Websites need improvement for the effective healthcare delivery. Furthermore, since this study is a pilot study, there is room for improvement particularly considering staff members as well other tribes and gender. This research which is an ongoing research emphases the importance of involving end users and conducting usability testing to the success of Hospital Website.

References


