

Design Evaluation of Academic Library Websites in Nigeria

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ABSTRACT

Users are beginning to yearn that the academic library website becomes a replacement for the block and mortar libraries. The goal of the research was to evaluate academic library websites in Nigeria against recommended web design elements and use the outcome to rank the sites in the order of their performance on the availability scale. Sixteen (16) academic library websites selected were those identifiable, findable and verified to be available over a period of one month. The heuristic inspection method was adopted for the study. A designer's checklist comprising 47 web design elements (4 identification details, 5 primary web elements, 18 web design features and 20 web content elements derived from the literature) was used for the investigation. Each academic library was evaluated against the checklist and available items were recorded as 1(Yes/Available) and 0(No/Not available). The performance on the availability scale was used to rank the academic library websites. The research revealed that many of the items verified were available on the academic library websites. However, the researchers did not find name of webmaster and e-mail address of 9 and 11 academic library websites respectively; search tool, contact address and location information could not be found on a number of academic library websites; most of the primary web elements were available and placed on the top left and centre left of the homepages while web design features and web content elements were available in various degrees on the websites. On the availability index, American University of Nigeria Library, Yola was ranked 1 with availability index of 78.72 while Bayero University Kano Library was ranked 16 with availability index of 31.91. It was concluded that none of the academic library websites had all items verified. It was recommended that all the academic library websites should review their website design regularly so that they can be up to date on the availability of recommended web design elements.

Keywords: Design evaluation; Design elements availability index; Design elements availability ranking; Academic library websites.

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I. INTRODUCTION

University library websites have sprung up all over the world wide web as they become an extension of the block and mortar fixed libraries. The several advantages of

library websites over the block and mortar counterparts make them a source of information on the go and without registration of presence at the physical location of the libraries. University library websites are expected to perform all the services rendered by the block and mortar

libraries and maintain high fidelity with user so that they can be well served. The university library websites were therefore expected to be designed with such considerations in mind. The implementation of such purpose- designed websites should be seen as a useful contribution in making library services available to clients.

In doing this, designers are expected to comply or adhere to guidelines and principles provided by experts and practitioners to guide the design of the library websites. These principles and guidelines, derived from theory and practice can help deliver standard and usable websites. Evaluating the design of university library websites will assist in discovering design errors, pinpointing areas requiring redesign, maintenance or improvement so that library users can be better served.

Website usability is linked to user centered design principles and guidelines. A website may be usable if it is designed strictly and in accordance with these principles and guidelines. The goal of usability will be better served by regularly evaluating the design of websites through in-house or commissioned efforts, but this is also an area of research which has become popular in the digital age.

The researchers are of the view that conducting a research in this area serves the need of scholarship and enhance the beauty of practice as university libraries can look up areas of deficiency in their websites and remedy them for the benefit of their users.

OBJECTIVES OF THE STUDY

The objectives of the study are:

1. identify academic libraries in Nigeria with functional websites.
2. identify web design elements recommended for academic library websites.
3. determine the availability of recommended web design elements on academic library websites in Nigeria
4. identify the web design features that are available on academic library websites in Nigeria.
5. ascertain the web contents available on academic library websites in Nigeria
6. rate the academic library websites in Nigeria on the availability of recommended web design elements.
7. rank the academic library websites in Nigeria in accordance to their performance on availability of recommended website elements.

RESEARCH QUESTIONS

The following research questions guided the study:

1. What are the names of academic libraries in Nigeria with functional websites?
2. What identification details are available on academic library websites in Nigeria?
3. What primary web elements are available on academic library websites in Nigerian and how are they presented?
4. What web design features are available on academic library websites in Nigeria?
5. What web contents are available on academic library websites in Nigeria?
6. What is the rate of availability of web design elements on academic library websites in Nigeria?
7. How do academic library websites in Nigeria rank on the availability of web design elements?

II. REVIEW OF RELATED LITERATURE

Web design is the process of creating websites [1]. Web design is the process of creating, with the intention of presenting the content on electronic web pages which the end users can access through the internet with the help of a browser [2]. Web design means planning, creating and updating of the website [3].

Website design comprises several aspects including webpage layout, content production and graphical design. Website design involves information architecture, website structure, user interface, navigation ergonomics, website layout, color contrasts, fonts and imagery (photography) as well as icon design. All these combined together to form websites. In classical terms, design describes the visual appearance of a website though in reality, it includes other things that simplify using of websites and help to find information faster as can be seen from the components and tasks. Web designers also consider the site's audience, function and traffic to specific sections when deciding designs [4].

Websites are known to be created using a markup language called hypertext markup language (HTML). The use of HTML tags assists web designers to define the content and metadata of each web page while cascading style sheets (CSS) define the layout and appearance within the webpage. Most websites include a combination of HTML and CSS that defines how each page will appear in a browser. While HTML and CSS are used to design the look and feel of a website, graphic designers must create images separately for use on the web.

Library websites are created using the same process and they have grown astronomically in recent times as a result of the need to maintain web presence and provide an alternative avenue to be useful to their clients.

Why Evaluate Websites?

The major interest in evaluating websites is to identify usability problems or obtain usability measures by assessing the extent to which usability objectives have been achieved (summative evaluation). It may also be used to improve the usability of the product as part of design development (formative evaluation). Since websites are designed to attract traffic to them and enable users to carry out relevant tasks with ease, there is always a need to evaluate websites to ensure that usability objectives continue to be met.

There are a variety of methods for evaluating websites usability. Certain methods use data gathered from users (Inquiry methods) while others rely on usability experts (Cognitive modeling and Inspection methods). Inquiry methods like task analysis, focus groups, questionnaire and surveys are used for collecting qualitative data from users. Since evaluation is geared towards identifying usability problem, users centered design guidelines (heuristics) may be incorporated with inquiry methods to perform the evaluation. Heuristic evaluation is a usability engineering method for finding and assessing usability problem in a user interface design as part of the interaction design process. Heuristics also called guidelines, are general principles and rule of the thumb that can guide design decisions and can be used to evaluate the design website.

Nielsen and Molich [5] have developed a short list of general heuristics, developed and tested a procedure for using them to evaluate a design. Since Nielsen and Molich's nine-point heuristics, the web is awash with heuristics, derived of course from the personal experience of web developers, interface designers, programmers, for evaluating every aspect of websites from home page, task orientation, navigation and information architecture, trust and credibility to forms and data entry [6].

In addition to the above, graphic design principles from Human-Computer Interaction are also being used in guiding website design and consequently evaluation. Merged for use in a design, using these principles can provide the user experience needed to access and use a website.

The world wide web probably commenced implementation before its activities could be brought under general principles. So, there were disparate approaches to the design and implementation of websites as can be seen from Nielsen and Tahir [7] who deconstructed 50 such websites and found majority of the websites failed the design test. This 113-item design guideline for homepage usability popularised by Nielsen [8] is probably the most definitive work on this subject. Nielsen's principles and guidelines of web design have become a common feature in the literature and in many cases leading to the development of standards and checklists that can be used to evaluate websites. For example, McClement and Becker [9], wrote web page standards for college and research libraries, Raward [10] developed a checklist for best practice design principles for academic library website and Wijayarathne and Singh [11] came up with a checklist and evaluative instrument for academic library websites.

Since these guidelines, principles, checklists came into the scene, their application has been on a steady rise. Several research efforts in the evaluation of academic library websites using the derived checklists or their modifications have been identified in the literature. Tian [12] evaluated top rank Chinese university libraries using a design checklist to create webometric data which were analysed to rank them, Shukla and Tripathi [13] established content awareness criteria for academic library websites, Solomon [14] used Nielsen and Tahir [7] to evaluate the websites of Ohio Public libraries and grouped them according to their performance on Pass, Failed and Not Applicable grade. Chou, Bridges and Commander [15] examined the design, layout, content, site management and usability of 1,469 academic and public libraries in 50 states of USA using recommended guidelines and found a common trend for homepage design.

Mohamadesmaeil and Koohbaanani [16] developed an exploratory checklist and using 11 evaluation criteria and 160 components evaluated Iran National Library websites, they recommended that design should be based on library's major aim- information retrieval and rendering public information services.

Thorpe and Lukes [17], and Becker [18] have used the checklist approach in evaluating library website and in the process unearthed issues for fixing, maintenance and redesign as the case may be.

Review of Empirical Studies

Library websites design, analysis of content and form and usability evaluation received good mentions in the literature. In the first category is the work of Harpel-Burke [19] who compared library homepages of medium-sized universities with commercial homepages using Nielsen and Tahir [7] guidelines. The authors found that commercial homepages were livelier than library homepages. In the second category are studies relating to content and form analysis of library websites. Cohen and Still [20] compared the content, functionality and form of a research university and a two-year college library websites and found that the former had better content, was more functional and had more copious use of forms than the latter. Michalec [21] did a content analysis of art library websites; Mohammed, Aminu and Umar [22] analysed the contents of university library websites in Nigeria and found that general information about selected university library services, physical holdings were inadequate and recommended improved library content on websites, development and enhancement of curriculum in library schools to include web design among others. Gbaje and Kotso [23] analysed the contents of academic library websites in Nigeria and found that more than 50% did not have a dedicated website and were accessible only through their institutional homepages, 46% provided access to OPAC and had navigation available. Quatab and Mahmood [24] also analysed the content of library websites in Pakistan and found that they lacked uniformity and often missed important features.

The navigation tools of 41 academic health science library websites studied by Brower [25] showed similarity in the tools used. Academic library websites in Malaysia were evaluated by Lee and Teh [26] and they discovered they only provided general information and concluded that libraries had not come up to expectation as virtual expressions of the quality levels of academic libraries. From the review of empirical literature, there is need to see evaluation of academic library websites as a necessary exercise for improving on service delivery. This research was conducted with academic libraries that have functional and dedicated websites rather than websites accessed via the homepage of their parent institutions using design elements generally recommended in the literature. A better insight is expected to be provided about the level of compliance of academic library websites in Nigeria.

III. METHOD

The Library Website Design Evaluation (LWDE) checklist was developed through an extensive literature survey. The checklist consists of the following 5 sections:

- Section 1: General information about the library website being evaluated e.g. Name of Library, Uniform Resource Locator (URL), webmaster, e-mail address.
- Section 2: Organisation and presentation of five web elements e.g. Library name and logo, search box, main navigation tool, library location information, library contact information
- Section 3: Eighteen (18) recommended website features adapted from Raward [10], Solomon [14], Neal and Herzig [27] and Jasek [28] like navigation tools, search tools, tag line, site map etc.
- Section 4: Twenty (20) types of library web content elements recommended in the literature [10,14,27,28, 29,30] like location information, link to OPAC, library hours, library news, library service etc.

Universities, Polytechnics and Colleges of Education with library websites were used for the study. Names of such institutions were obtained from National Universities Commission, National Board for Technical Education and National Commission for Colleges of Education and used to search their web addresses. The researchers selected only those academic library websites that were identifiable, findable and continuously available for browsing and access for a month. The websites were inspected for available web elements with 0 or 1 used to denote No/Not Available and Yes/Available respectively. Data obtained was tabulated and percentages were used as a means of evaluating the design. Academic library websites in Nigeria were rated according to their performance on the availability index formula as follows: Availability index = $100 * \frac{\text{Total Yes/Available Answers}}{\text{Total Yes/Available + No/Not Available Answers}}$. The performance rating was expressed as follows: 70+ (Excellent), 60-69 (Good), 50-59 (Average), 40-49 (Fair), 1-39 (Poor). The academic library websites were also ranked in order of performance on the availability index from 1 to 16, 1 being the academic

library website with the best performance on the availability index and rank 16 being the lowest.

IV. RESULTS

Availability of identification information on academic library websites in Nigeria

The results on availability of identification information on academic library websites in Nigeria are presented in Table 1.

Table 1 presents general information about the academic library websites studied. Out of the 16 websites, 14 were university library websites, one a polytechnic library website and a college of education library website. Out of the 14 university library websites, 9 were conventional federal universities: Lib1; Lib3; Lib5; Lib6; Lib7; Lib8; Lib9; Lib11; Lib12. Out of the remaining five university library websites, two Lib4 and Lib10 are specialised federal university libraries), two Lib13 and Lib14 are state-government owned. Lib15 and Lib16 completed the list of Federal academic library websites. Lib2 is the only private university library website involved in the study.

Web addresses were provided for all the sixteen academic library websites as can be observed from Table 1. However, only three of the 16 academic library websites provided information about their webmasters (Tenence Professional Services for Lib1; Benson T. Alli (Lib2); IKANET Technologies for Lib7) who are considered to be external consultants to the institutions while ICT centre was the internally sourced webmaster for Lib14.

Email addresses were available only on four of the 16 academic library websites (benson@uniosun.edu.ng for Lib2; kilwebmaster@abu.edu.ng for Lib8; library@uniosun.edu.ng for Lib13 and elibrary@fceyola@edu.ng for Lib16).

Figure 1- 16 present the screen shot of the homepage of the 16 academic library websites studied. The screenshots of the academic library websites studied are presented according to the arrangements on Table 2.

Availability and placement of primary web elements on the academic library websites in Nigeria

The results on availability and placement of primary web elements on academic library websites in Nigeria are presented on Table 2.

Table 2 displays the location of primary web elements on the home pages of the 16 academic library websites.

Navigation tool was located at the top centre of the homepage of ten university library websites (Lib1, Lib4, Lib5, Lib7, Lib8, Lib9, Lib11, Lib13, Lib14 and Lib15) while four (Lib6, Lib10, Lib12, and Lib16) had it at the top left, and one each had it at top right (Lib2) and top right and top left (Lib3) respectively.

Eight academic library websites placed their search tool at top right (Lib1, Lib6, Lib8, Lib10, Lib11, Lib12, Lib13, Lib14 and Lib15), one each at top centre (Lib2); top left (Lib4), side left (Lib5), side centre (Lib9) and side right (Lib15) respectively, while 3 (Lib3, Lib7 and Lib16) did not place search tool on their websites.

Name and logo of the academic libraries were placed at top left on 13 websites (Lib1 – Lib12, and Lib16), two at top right (Lib13 and Lib14) while these are not available for Lib15.

Contact information was available for 10 of the academic library websites at top right (Lib1, Lib6 – Lib11, Lib14 – Lib16) at top centre (Lib2), top left (Lib3), bottom left (Lib13) while Lib4, Lib5 and Lib13 did not provide this information on their websites.

Location information was available for four at bottom right (Lib4, Lib5, Lib8 and Lib9), top right (Lib15); bottom left (Lib4, Lib13) while (Lib1 – Lib3, Lib7, Lib10 – Lib12, Lib14 and Lib16) did not provide location information.

Availability of design features on academic library websites in Nigeria

Table 3 presents the result on availability of web design features of academic library websites in Nigeria.

Table 3 shows availability of design features on the academic library websites studied. All the 16 academic library websites (Lib1 – Lib16) provided navigation tools on all pages and navigation back from the homepage from every page respectively. However, 13 out of the 16 websites provided a search tool for the sites (Lib1, Lib2, Lib4, Lib5, Lib6, Lib8 – Lib15) while 3 (Lib3, Lib7 and Lib16) did not provide a search tool for their websites.

Date of last update was indicated for Lib2 only while the remaining 15 websites did not indicate date of last update. Nine websites (Lib1, Lib5, Lib6, Lib9 – Lib11 and Lib13 – Lib15) out of the 16 studied provided a tag line that briefly described what the web page/library does. On 13 of the library websites, library name and logo were found to be of reasonable size and location. In 12 of the library

websites (Lib2, Lib4 – Lib11, Lib14 – Lib16), font styles and text formatting were found to be limited and consistent while high contrast colours were used between the text and background on 13 (Lib1 – Lib5, Lib8 – Lib13, Lib15 and Lib16) of the websites. Text could not be resized on all the 16 websites while graphic design was free and uncluttered in 8 (Lib2, Lib5 – Lib8, Lib12, Lib14 and Lib15) of the websites. In 9 of the websites (Lib5, Lib6, Lib8, Lib9, Lib11 – Lib15), graphics was used appropriately to address specific needs while all the 16 websites were multi-browser friendly. None of the 16 websites gave the users the ability to pick their language. 10 (Lib1, Lib2, Lib4, Lib6, Lib9, Lib11, Lib13 – Lib16) of the 16 websites were organised logically so that similar sections are grouped together in the organization. Only one (Lib12) website had a sitemap. In thirteen (Lib1 – Lib4, Lib6, Lib7, Lib9 – Lib15) of the 16 websites, the headings were user-friendly while the headings, titles, and links were jargon free in 15 of the 16 websites with Lib5 defaulting in this.

Abbreviations and acronyms were spelled out or explained on 9 (Lib1, Lib2, Lib5, Lib6, Lib9 – Lib11, Lib13 and Lib16) while others did not provide these.

Availability of web content elements on academic library websites in Nigeria

Table 4 presents the result on availability of web content elements on academic library websites in Nigeria.

Table 4 shows content availability on the academic library websites studied. 10 (Lib2, Lib4 – Lib9, Lib11, Lib15 and Lib16) of the 16 libraries had library opening hours posted on the website while 7 (Lib1, Lib2, Lib6, Lib8, Lib9, Lib13 and Lib16) included library contact details.

Fifteen libraries but one (Lib3) had a link to access electronic resources including databases, online resources etc while 7 (Lib1, Lib2, Lib4, Lib6, Lib9, Lib13 and Lib16) of the 16 library websites included location information such as address, map or direction, only 6 (Lib2, Lib4, Lib5, Lib7, Lib9, Lib10) provided circulation information (how to get a library card, loan period, etc).

Information about library and library news and events were provided on 8 (Lib1, Lib3, Lib4, Lib5, Lib8, Lib9, Lib11, and Lib16) of the 16 websites. Information on library services or link to library services was provided by 12 (Lib1, Lib2, Lib4 – Lib11, Lib15 and Lib16) of the 16 libraries while 8 (Lib1, Lib2, Lib5, Lib6, Lib7, Lib8, Lib13 and Lib14) libraries included a link to the OPAC. Users can reserve/borrow/renew books or materials online

on only one (Lib5) of the 16 academic library websites. Users can get help or receive feedback on 6 (Lib2, Lib6, Lib8, Lib9, Lib13 and Lib16) of the 16 websites, 3 (Lib2, Lib8 and Lib12) included contact information for key staff individuals.

Virtual reference services were present on 6 (Lib2, Lib4 – Lib6, Lib8) of the 16 library websites while users can make comments or suggestions about 6 (Lib2, Lib4, Lib6, Lib9, Lib15, and Lib16) of the 16 library websites. None of the libraries provided search tips for OPAC. Three libraries (Lib1, Lib2 and Lib6) provided a link to special collections while 12 (Lib3 – Lib5, Lib7 – Lib13, Lib15 and Lib16) had date of creation or copyright on the websites. Users can customise their experience on 7 (Lib1, Lib2, Lib4, Lib6, Lib9, Lib13, Lib16), of the 16 websites, 6 (Lib4, Lib6, Lib10, Lib12, Lib13, Lib16) provided feed for blogs, new materials, events etc and one (Lib2) indicated the date of last update.

Design element availability index of academic library websites in Nigeria

Table 5 presents the design elements availability index for the 16 academic library websites.

Design elements availability ranking of academic library websites in Nigeria

Table 6 presents the design elements availability ranking of academic library websites in Nigeria

Table 6 presents design elements availability ranking by academic library website. Lib2, Lib6, Lib9, Lib4, Lib16, Lib8, Lib13 which scored availability index of 50 above were ranked 1 – 10 while performance below 50 were ranked 11 – 16 (Lib1, Lib5, Lib11, Lib15, Lib10, Lib7, Lib12, Lib14 and Lib3). American University of Nigeria Library Yola, topped the list while Bayero University Library Kano was placed 16.

V. DISCUSSION

Availability of identification information on academic library websites in Nigeria

All the academic library websites studied had one deficiency or the other in one or more areas of the study. Twelve of the academic library websites did not provide the name of their webmaster. It is not clear why this is so however, only Enugu State University of Science and Technology Library was powered by the ICT Centre of the university while the remaining three were powered by private consultancy companies. E-mail addresses were provided on only four of the sixteen academic library

websites. Availability of e-mail address should facilitate communication between the users and the academic library websites and it is difficult to see how this can be done without it.

Availability and placement of primary web elements on academic library websites in Nigeria

The placement of primary web elements on the academic library websites seems to follow a pattern- navigation tools are generally placed on the top. However, 10 academic library websites placed their navigation tool on the top centre, 1 on the top right, 4 on the top left and 1 on two locations, top right and top left. Some of the academic library websites did not have search tool, contact information and location information. Majority of the academic library websites place their search tool, name and logo, and contact information on the top of the page though the exact location varied from top centre, top right to top left while location information was placed at bottom right or left of the homepage. The placement of primary web elements on academic library websites in Nigeria is consistent with the recommendation by Raward [10], Solomon [14] and Neal and Herzig [27] that navigation tool should be placed at top centre or left side, name of library or logo should be placed above the navigation tool at top centre or top left of the page.

Availability of web features and content on academic library websites in Nigeria

Some of the elements were resoundingly available on most of the academic library websites in Nigeria. These include: navigation tools on all web pages, navigation back to the home page from every page. However, on 15 of the 16 academic library websites studied, name and logo were of reasonable size and location; headings, titles and links were jargon-free; link to access electronic resources (databases, online reference, e-journals, e-books) but the links in most cases were dead when attempts were made to enter them suggesting the possibility that the libraries failed to renew their subscriptions. The date of last update, sitemap, provision for reserve/borrow/renew books or materials online were available on only one academic library website. With the non-provision of any of these items in any of the remaining 15 academic library websites, they are unable to perform these library function suggesting that the academic libraries merely registered their presence on the WorldWideWeb. None of the academic library websites had provision for text resizing, picking users' language and search tips for OPAC.

Availability index and ranking of academic library websites in Nigeria

The performance of American University of Nigeria Library, Yola (rank 1) is highly commendable having overtaken all the academic libraries that had long been in existence before it. Three first generation federal university libraries (University of Lagos Library, Akoka; Kenneth Dike Library, University of Ibadan, Ibadan; Kashim Ibrahim Library, Ahmadu Bello University, Zaria and Nnamdi Azikiwe Library, University of Nigeria, Nsukka) ranked 2,3,6 and 9 on the availability index. These libraries were expected to be in the vanguard of website application given the fact that automation commenced with these libraries in the 1970s. The second-generation federal universities represented by Bayero University Library, Kano performed poorly on the availability index having been ranked 16th of the 16 academic libraries studied. Her generation mate, Donald E.U. Ekong Library, University of Port-Harcourt ranked 13. The Federal University of Technology Owerri Library, a third-generation university library ranked 5 and performed better than its first second generation counterparts. Nimbe Adedipe Library of Federal University of Agriculture, Abeokuta failed to match her Owerri counterpart having ranked 12.

The new federal university libraries in Lokoja and Oye ranked 9 and 13 respectively. The two state university libraries in the study, Osun State University Library, Osogbo and Enugu State University of Science and Technology Library ranked 7 and 15 respectively. The performance of Prof. Mustafa Abba Library, Federal College of Education, Yola (ranked 4) is a welcome development especially from that segment of Nigerian higher education category. One is tempted to submit that the American University of Nigeria Library, Yola may have been an inspiration for the college library. Federal Polytechnic Ado Ekiti Digital Library ranked 9 is welcome. That these college and polytechnic libraries were the only few that met the selection criteria and had performed fairly well is an indication that they are not complacent and making efforts to join the information technology revolution.

VI. CONCLUSION AND RECOMMENDATIONS

The study conducted design evaluation of academic library websites in Nigeria. A total of 16 websites were identified and used for this study. The result revealed that all the academic library websites studied were defective in one or more areas. For instance, common identification information such as e-mail address and webmaster

information were absent on most of the academic library websites. It was also observed that the availability and placement of primary web elements on most of the academic library websites seems to follow a consistent pattern and are generally placed at the top. The study further revealed that web features such as navigation tools and web contents such as logo, location information, links to electronic resources were present in most of the academic library websites in Nigeria. Furthermore, the availability index and academic library websites ranking revealed that American University of Nigeria Library, Yola which is a private university ranked above all the libraries in public universities established before it while Bayero University Library, Kano which is a second-generation university, owned by the federal government of Nigeria performed poorly.

Based on these findings, the study recommends that the design of academic library websites should be more user-centric rather than focusing on achieving web presence alone. The study also recommends that librarians should undergo web development training and acquire skills that will empower them to participate actively in the analysis, design, implementation and administration of academic library websites. In addition, it is recommended that all the academic library websites conduct periodic review of their website design in order to be up to date on available recommended web design best practice.

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Table 1: Identification information on academic library websites in Nigeria

Library Code	Name of Library	Web Address of Library	Web Master	E-mail address	Remark
Lib1	Nnamdi Azikiwe Library, University of Nigeria, Nsukka	library.unn.edu.ng	Tenece Professional Services	Nil	Federal
Lib2	American University of Nigeria Library, Yola	library.aun.edu.ng	Benson T. Alli	benson@aun.edu.ng	Private
Lib3	Bayero University Library, Kano	library.buk.edu.ng	NA	NA	Federal
Lib4	Federal University of Technology, Owerri Library	library.futo.edu.ng	NA	NA	Federal
Lib5	Prof. Festus A. Nwako Library, Nnamdi Azikiwe University, Awka	library.unizik.edu.ng	NA	NA	Federal
Lib6	University of Lagos Library	library.unilag.edu.ng	NA	NA	Federal
Lib7	Donald E.U. Ekong Library, University of PortHarcourt	www.library.uniport.edu.ng	IKANET Technologies	NA	Federal
Lib8	Kashim Ibrahim Library, Ahmadu Bello University, Zaria	https://library.abu.edu.ng		kilwebmaster@abu.edu.ng	Federal
Lib9	Kenneth Dike Library,	library.ui.edu.ng	NA	NA	Federal

	University of Ibadan				
Lib10	Nimbe Adedipe Library, Federal University of Agriculture, Abeokuta	library.unaab.edu.ng	NA	NA	Federal
Lib11	Federal University Lokoja Library	library.fulokoja.edu.ng	NA	NA	Federal
Lib12	Federal University Oye Library	library.fuoye.edu.ng	NA	NA	Federal
Lib13	Osun State University Library	library.uniosun.edu.ng		library@uniosun.edu.ng	State
Lib14	Enugu State University of Science and Technology Library	www.library.esut.edu.ng	ICT Centre ESUT	NA	State
Lib15	Federal Polytechnic Ado-Ekiti Digital Library	library.fedpolyado.edu.ng	NA	NA	Federal
Lib16	Prof. Mustafa Abba Library, Federal College of Education Yola	library.fceyola.edu.ng	NA	elibrary@fceyola.edu.ng	Federal

Table 2: Availability and placement of primary web elements on academic library websites in Nigeria

Library Code	Navigation Tool	Search Tool Placement	Name and Logo	Contact Information	Location Information
Lib1	TopCentre	TopRight	TopLeft	TopRight	NA
Lib2	TopRight	TopCentre	TopLeft	TopCentre	NA
Lib3	TopRight and TopLeft	NA	TopLeft	TopLeft	NA
Lib4	TopCentre	TopLeft	TopLeft	NA	BottomLeft
Lib5	TopCentre	SideLeft	TopLeft	NA	BottomRight
Lib6	TopLeft	TopRight	TopLeft	TopRight	BottomRight
Lib7	TopCentre	NA	TopLeft	TopRight	NA
Lib8	TopCentre	TopRight	TopLeft	TopRight	BottomRight
Lib9	TopCentre	SideCentre	TopLeft	TopRight	BottomRight
Lib10	TopLeft	TopRight	TopLeft	TopRight	NA
Lib11	TopCentre	TopRight	TopLeft	TopRight	NA
Lib12	TopLeft	TopRight	TopLeft	NA	NA
Lib13	TopCentre	TopRight	TopRight	BottomLeft	BottomLeft
Lib14	TopCentre	TopRight	TopRight	TopRight	NA
Lib15	TopCentre	SideRight	NA	TopRight	TopRight
Lib16	TopLeft	NA	TopLeft	TopRight	NA
		SUMMARY			
	TopCentre= 10	TopRight= 8	TopLeft= 13	TopRight= 10	TopRight= 1
	TopRight= 1	TopCentre= 1	TopRight= 2	TopCentre= 1	BottomRight= 4
	TopLeft= 4	TopLeft= 1	NA= 1	TopLeft= 1	BottomLeft= 2
	TopRight and TopLeft= 1	SideRight= 1		BottomLeft= 1	NA= 9
		SideLeft= 1		NA= 3	
		SideCentre= 1			
		NA= 3			

Table 3: Availability of web design features on academic library websites in Nigeria

S/ NO	FEATU RES	Li b1	Li b2	Li b3	Li b4	Li b5	Li b6	Li b7	Li b8	Li b9	Lib 10	Lib 11	Lib 12	Lib 13	Lib 14	Lib 15	Lib 16	FR EQ
1	Are Navigati on tools on all pages?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
2	Is navigati on back to the homepa ge from every page?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
3	Is there a search tool for the site?	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	0	13
4	Is date of last update indicate d?	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5	Is tag line that briefly describe s what the web page/libr ary does availabl e?	0	1	0	0	1	1	0	0	1	1	1	0	1	1	1	0	9
6	Is library's name and logo of reasonab le size and location ?	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	13
7	Are font styles and text formatti	0	1	0	1	1	1	1	1	1	1	1	0	0	1	1	1	12

	ng limited and consistent?																	
8	Are high contrast colours used between the text and background?	1	1	1	1	1	0	0	1	1	1	1	1	1	0	1	1	13
9	Can the text be resized?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Does graphic design feel free and uncluttered?	0	1	0	0	1	1	1	1	0	0	0	1	0	1	1	0	8
11	Is graphic used appropriately to address specific needs?	0	0	0	0	1	1	0	1	1	0	1	1	1	1	1	0	9
12	Is the website multi-browser friendly?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
13	Does website give it users the ability to pick their language?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	Is the website organised logically?	1	1	0	1	0	1	0	0	1	0	1	0	1	1	1	1	10

	so that similar sections are grouped together in the organisation?																	
15	Is there a sitemap?	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
16	Are the headings user-friendly?	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	0	13
17	Are the headings, titles and links jargon free?	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	15
18	Are abbreviations and acronyms spelled out or explained?	1	1	0	0	1	1	0	0	1	1	1	0	1	0	0	1	9

Key: 1=Yes/Available, 0=No/Not available

Table 4: Availability of web content elements on academic library websites in Nigeria

S/ N O	CONT ENTS	Li b1	Li b2	Li b3	Li b4	Li b5	Li b6	Li b7	Li b8	Li b9	Lib 10	Lib 11	Lib 12	Lib 13	Lib 14	Lib 15	Lib 16	FR EQ
1	Are opening time/library hours posted?	0	1	0	1	1	1	1	1	1	0	1	0	0	0	1	1	10
2	Does the site include library contact details?	1	1	0	0	0	1	0	1	1	0	0	0	1	0	0	1	7
3	Is there a link to access electronic resources including databases, online reference, e-journals, e-books etc?	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	15
4	Does the site include location information such as address, map or direction?	1	1	0	1	0	1	0	0	1	0	0	0	1	0	0	1	7
5	Does the site provide circulation	0	1	0	1	1	0	1	0	1	1	0	0	0	0	0	0	6

	information (how to get a library card, loan period, time, etc)?																	
6	Is there information about library and library news and events?	1	0	1	1	0	1	0	1	1	0	1	0	0	0	0	1	8
7	Does the website describe library services or is there a link to library service?	1	1	0	1	1	1	1	1	1	1	1	0	0	0	1	1	12
8	Does the site include a link to the OPAC?	1	1	0	1	0	1	1	1	0	0	0	0	1	0	1	0	8
9	Can users reserve/borrow/r new books or materials online?	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
10	Is it possible to get help or feedback?	0	1	0	0	0	1	0	1	1	0	0	0	1	0	0	1	6

11	Does the site provide information about library policies ?	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	3
12	Does the site include contact information for key staff individuals?	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	3
13	Are virtual reference services present?	0	1	0	1	1	1	0	1	0	0	0	0	0	0	0	1	6
14	Can comments or suggestions be made about the site?	0	1	0	1	0	1	0	0	1	0	0	0	0	0	1	1	6
15	Are there search tips for the OPAC?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	Is there a link to special collections?	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
17	Is there a creation or copyright date on the website?	0	0	1	1	1	0	1	1	1	1	1	1	1	0	1	1	12

18	Can users customise their experience?	1	1	0	1	0	1	0	0	1	0	0	0	1	0	0	1	7
19	Does the website have an RSS feed for blogs, new materials, events etc?	0	0	0	1	0	1	0	0	0	1	0	1	1	0	0	1	6
20	Is the date of the last update indicated?	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Key: 1=Available, 0=Not available

Table 5: Design elements availability index of academic library websites in Nigeria

Library Code	Name of Library	Number of Yes	Number of Yes + No	Availability Index	Remark
Lib1	Nnamdi Azikiwe Library, University of Nigeria, Nsukka	25	47	53.12	Average
Lib2	American University of Nigeria Library, Yola	37	47	78.72	Very Good
Lib3	Bayero University Library, Kano	15	47	31.91	Poor
Lib4	Federal University of Technology, Owerri Library	28	47	59.57	Average
Lib5	Prof. Festus A. Nwako Library, Nnamdi Azikiwe University, Awka	24	47	51.06	Average
Lib6	University of Lagos Library	33	47	70.12	Very Good
Lib7	Donald E.U. Ekong Library, University of PortHarcourt	20	47	42.55	Fair
Lib8	Kashim Ibrahim Library, Ahmadu Bello University, Zaria	29	47	61.70	Good
Lib9	Kenneth Dike Library, University of Ibadan	31	47	65.96	Good
Lib10	Nimbe Adedipe Library, Federal University of Agriculture, Abeokuta	22	47	46.81	Fair
Lib11	Federal University, Lokoja Library	24	47	51.06	Average
Lib12	Federal University Oye Library	19	47	40.43	Fair
Lib13	Osun State University Library	27	47	57.45	Average
Lib14	Enugu State University of Science and Technology Library	20	47	42.55	Fair
Lib15	Federal Polytechnic Ado-Ekiti Digital Library	24	47	51.06	Average
Lib16	Prof. Mustafa Abba Library, Federal College of Education Yola	28	47	59.57	Average

Table 6: Design elements availability ranking of academic library websites in Nigeria

Rank	Library Code	Name of Library	Number of Yes	Number of Yes + No	Availability Index	Remarks
1	Lib2	American University of Nigeria Library, Yola	37	47	78.72	Very Good
2	Lib6	University of Lagos Library	33	47	70.12	Very Good
3	Lib9	Kenneth Dike Library, University of Ibadan	31	47	65.96	Good
4	Lib8	Kashim Ibrahim Library, Ahmadu Bello University, Zaria	29	47	61.70	Good
5	Lib16	Prof. Mustafa Abba Library, Federal College of Education Yola	28	47	59.57	Average
5	Lib4	Federal University of Technology, Owerri Library	28	47	59.57	Average
7	Lib13	Osun State University Library	27	47	57.45	Average
8	Lib1	Nnamdi Azikiwe Library, University of Nigeria, Nsukka	25	47	53.12	Average
9	Lib5	Prof. Festus A. Nwako Library, Nnamdi Azikiwe University, Awka	24	47	51.06	Average
9	Lib11	Federal University Lokoja Library	24	47	51.06	Average
9	Lib15	Federal Polytechnic Ado-Ekiti Digital Library	24	47	51.06	Average
12	Lib10	Nimbe Adedipe Library, Federal University of Agriculture, Abeokuta	22	47	46.81	Fair
13	Lib7	Donald E.U. Ekong Library, University of Port Harcourt	20	47	42.55	Fair
14	Lib12	Federal University Oye Library	19	47	40.43	Fair
15	Lib14	Enugu State University of Science and Technology Library	13	38	34.21	Poor
16	Lib3	Bayero University Library, Kano	9	38	23.68	Poor