Abstract

**Purpose** – The study aims to investigate the level of awareness and use of Web 2.0 tools by librarians in university libraries in Nigeria.

**Design/methodology/approach** – A questionnaire was used to collect data from 176 librarians in 49 university libraries in Nigeria.

**Findings** – It emerged that the librarians were more familiar with social networking sites, instant messaging, media sharing sites, blogs and wikis. The popularity of these Web 2.0 tools made them the most frequently used by the librarians. Web 2.0 tools like Flickr, RSS feeds, podcasts, social bookmarking, were among the least used. The study revealed that librarians use Web 2.0 tools mostly for reference services online, library news/events, training resources, and image and video sharing. Lack of facilities such as computers with internet access, lack of skills, and lack of time were indicated as some of the barriers in the use of Web 2.0 tools by librarians in university libraries in Nigeria.

**Practical implications** – These research results can be consulted by interested librarians as they plan to implement Web 2.0 applications in their libraries.

**Originality/value** – This study draws an overall picture of Web 2.0 applications in Nigerian university libraries and attempts to provide helpful information to better understand how librarians elsewhere are utilizing Web 2.0 technologies in rendering library services.

**Keywords** Web 2.0 tools, Librarians, University libraries, Nigeria, Internet, Software tools, Library users

**Paper type** Research paper

**Introduction**

Web 2.0 technologies are so popular that they now dominate the everyday personal and professional life of millions of users. This popularity is affecting the way that libraries, museums, archives and other cultural heritage organisations operate. As librarianship evolves and adapts to the needs of the internet generation, using Web 2.0 has become an indispensable tool in the work of the professional. The term Web 2.0 has been loosely defined as the second generation of web-based platforms. These consist of applications specifically designed to aid online collaboration and user-generated...
content sharing (Clear Swift, 2007; O’Reilly, 2007). According to Wang (2011, p. 3) “many enthusiastic librarians around the world are implementing library 2.0’s tools and ideas in all different kinds of library settings and creative programs, and trying to engage our users in new ways.” The paper added that the applications of Web 2.0 tools and strategies have made innovative practices a normal way of working in the library profession, and the spirit of Web 2.0 is rising even higher rather than fading away. Web 2.0 services currently offered by libraries include bookmarking, user-added reviews/rating/summaries, blogs, wikis, RSS (real simple syndication feeds), podcasts, vidcasts, instant messaging, tagging, social networking sites, streaming audio and video, chat, community photo services, community book services, Twitter, reader’s advisory, book lists, and maintaining a virtual library in second Life (Tripathi and Kumar, 2010; O’Dell, 2010).

Web 2.0 is not restricted to these tools and services, some of the popular examples of Web 2.0 are included in Table I.

Secker (2008) provides a comprehensive literature review about Web 2.0 applications in libraries which explores the presence of the concept in different libraries. The study concludes that social software and Web 2.0 technologies offer enormous potentials for the library community. The role of librarians as

<table>
<thead>
<tr>
<th>S/N</th>
<th>Web 2.0 tools</th>
<th>Definitions</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>Wiki</td>
<td>Wiki is a collaborative web site which can be directly edited by anyone with access to it (Wikipedia.org)</td>
</tr>
<tr>
<td>2.</td>
<td>Blog</td>
<td>Blog is a web site, usually maintained by an individual, with regular entries of commentary, descriptions of events, or other material such as graphics or video (Wikipedia.org)</td>
</tr>
<tr>
<td>3.</td>
<td>Instant messaging (IM)</td>
<td>IM is a live online communication synchronous channel which facilitates online interaction between two parties</td>
</tr>
<tr>
<td>4.</td>
<td>Real simple syndication (RSS)</td>
<td>RSS is lightweight XML format which is used for publishing frequently updated content such as blog entries, news headlines, and podcasts in a standardized format (Geoghegan and Klass, 2005)</td>
</tr>
<tr>
<td>5.</td>
<td>Social networking sites (SNS)</td>
<td>Social networking sites are web-based services such as Facebook, Twitter, MySpace, etc. with hundreds of millions of users which allow subscribers to create web spaces where they can share their thoughts, music, videos and pictures (Geoghegan and Klass, 2005)</td>
</tr>
<tr>
<td>6.</td>
<td>Del.icio.us</td>
<td>Allows users to bookmark favorite sites and to share those bookmarks with others</td>
</tr>
<tr>
<td>7.</td>
<td>Podcast/streaming video and content</td>
<td>Podcasts are audio contents available on the internet that can be automatically delivered to a personal computer or MP3 player (Geoghegan and Klass, 2005)</td>
</tr>
<tr>
<td>8.</td>
<td>YouTube</td>
<td>Allows members to upload videos for everybody to see and vote on their popularity (Downes, 2005)</td>
</tr>
<tr>
<td>9.</td>
<td>Flickr</td>
<td>Allows for photo collecting, tagging, and distribution services (Downes, 2005)</td>
</tr>
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</table>

Table I. Definitions of different Web 2.0 tools
facilitators of collaboration and communication could therefore become more crucial in the Web 2.0 world. This confirms the prediction made by Gross and Leslie (2008) that Web 2.0 technologies are the “next big thing” in academic libraries, because they offer social networking capabilities in providing information and services to the library’s clientele. Rehman and Shafique (2011) state that “Web 2.0 technologies are blessings for library professionals as libraries can design attractive services using Web 2.0 applications without spending huge budgets for online hosting and storage.”

What is more difficult to calculate is the ability of libraries and librarians in university libraries in Nigeria to incorporate Web 2.0 applications successfully into their own repertoire of information services. The question is: can university libraries in Nigeria rise to the Web 2.0 challenge? Although some university libraries and their librarians in Nigeria are already using Web 2.0 tools, there are still many who do not know or use Web 2.0 tools. A shortage of human resources in information technology, a lack of budget devoted to newer technologies, interrupted power supply, lack of awareness of Web 2.0 tools, and lack of computers with constant internet access, might be some of the factors hindering Nigerian librarians’ use of Web 2.0 tools.

Many studies have been conducted worldwide on Web 2.0 applications since 2004. But little has been done on the use of Web 2.0 technologies in universities libraries in Nigeria. Many of these studies focus on one particular Web 2.0 application. For example, the application of Facebook, Twitter, blogs, Second Life, Flickr, Instant Messaging (IM), podcasts, wikis, and so on. Arising from this realisation, this study attempts to investigate the awareness and use of most Web 2.0 tools by librarians in Nigerian university libraries. To do this, the following research questions were raised:

RQ1. To what extent are librarians in Nigerian university libraries aware of Web 2.0 tools?
RQ2. What kind of Web 2.0 tools do they use in their libraries?
RQ3. For what purposes do these librarians use Web 2.0 tools?
RQ4. How do they learn the skills to use Web 2.0 tools?
RQ5. What are some of the barriers that librarians in Nigerian university libraries encounter in using Web 2.0 tools?

Literature review
The study by Kelly (2008) revealed that the most popular tool-application areas associated with Web 2.0 include, blogs, wikis, RSS, podcast, vidcasts, social sharing services, communication tools, social networks, folksonomies and tagging, and virtual worlds. Bradley (2007) and Farkas (2007a, b, c) believe that librarians should begin experimenting and using these tools to enhance the services they offer. Maness (2006, p. 4) observed that:

Web 2.0 will have substantial implications for libraries and recognizes that while these implications keep very close to the history and mission of libraries, they still necessitate a new paradigm for librarianship. Web 2.0 technologies (...) might create changes in how libraries provide access to their collections and provide user support to their clients.
Social networking sites

*Facebook*

With the enormous popularity of Web 2.0’s social networking platforms, libraries of all types have embraced them as a method of promoting themselves within their communities. A social networking site like MySpace was originally the most popular social networking site, while Facebook started with college students at Harvard and originally permitted only users with a college e-mail address to register (Chu and Meulemans, 2008). Recent studies have shown estimates placing Facebook with an 85 per cent market share among college students (Matthews, 2007). As a result of its strong user base among college students, Facebook appears to be the most logical social networking web site to be used by academic libraries. One of the primary uses of Facebook by academic libraries is to market the library with a library fan page. Libraries advertise hours, location, and web site information. By linking to the library’s web site the Facebook page acts as a portal to the library (Farkas, 2007a). Libraries also create events invitation programs as an additional forum to promote library activities (Chu and Meulemans, 2008).

Using Facebook applications, some academic libraries embed the library catalog to allow students to access the content of the library catalog without actually visiting the library’s web site (Farkas, 2007b). It is easy to use social media’s most popular tool to connect with your community. According to King (2011, p. 1):

> I spent part of the day connecting with people. I complained about a silly election video, chatted with a college friend about a band, and put some finishing touches on plans for a conference taking place at the library. I did all this through Facebook. These days, it seems like everyone has a Facebook account.

Another social networking site gaining popularity is Twitter. Twitter allows registered users to post brief messages for other users who follow the account and to comment on other users’ posts. Twitter allows librarians to go where the students are already located. Libraries post hour changes, events, new resources available, search tips, deadlines, and links to the library web sites. They also place responses to students’ comments, and news affecting students without the requirement that students visit the official library web site. The Yale Science Libraries (n.d) Twitter pages have approximately 2,000 followers and posts that link to current news articles and to library resources. Many libraries use Twitter for both instant messaging and for short announcements about library events and services (Kim and Abbas, 2010). Wyatt and Hahn (2011) advised that libraries should always give attribution for quotes and that students should also be encouraged to give attribution for quotes, possibly in a shortened form. They also advise that a user policy should be developed which should be mandatory for students to read before using these services.

Really Simply Syndication (RSS)

Libraries have already been making use of this new internet tool for disseminating library news and current alerts. Xu (2007) found that blogs, IM and RSS were the main Web 2.0 applications which have been used extensively by academic libraries of New York State and Long Island in the USA. Harinarayana and Raju (2010) reported that of the 57 library web sites considered for the study, 37 (64.91 per cent) of them had RSS feeds in their web sites. The purpose of providing RSS news feeds in university library web sites varied from publishing library news in providing information about
institutional classes to subscribing to RSS feeds to disseminate library news/announcements/events and exhibitions. Their study also revealed that a total of 12 (37.43 per cent) university library web sites used RSS feeds to alert users about the arrival of new titles/new acquisitions.

The study by Garoufallou and Charitopoulou (2011) found that majority of the respondents (72 per cent) indicated little use of tools such as RSS among Greek library and information science students. A study by Han and Liu (2010) found that RSS is the second most popular Web 2.0 tool, with 21 libraries using it out of a sample of 38 Chinese university libraries. Han and Liu (2010) gave three purposes of RSS application in Chinese university libraries; the first and basic one is the notification of information of interest to patrons which are initiated by libraries such as library news and events, and new books available. The second and most demanding function is the notification of personal information produced by patrons’ utilisation of library services such as the circulation record. The third purpose is for the easy and timely syndication of subject-related information for patrons.

**Blogs**

Blogging is an easy process for publishing ideas on the web to get the reactions of other users of the web. Libraries all over the world are using blogs for the easy dissemination of information to the targeted users. Han and Liu (2010) reported that blog was the third most common Web 2.0 tool being used with 13 per cent (five out of 38) of Chinese university libraries offering it. Blogs can be used to communicate library events, publicize information resources, train staff, and offer subject-related reference services (Han and Liu, 2010). The researchers observed that among five libraries setting up blogs, two of them used blogs mainly for librarians’ training or communication, not for patrons. Two libraries according to the researchers have blogs that are used to publicize news about information resources and library events. According to Virkus (2008, p. 263) “blogging is one of the most highly favoured features of Web 2.0.” Blogs encourage user interaction through the comment feature, which allows students to provide feedback regarding the information provided and on the library itself.

The possibilities for using blogs in the library by librarians are enormous. Dickson and Holley (2010) reported that librarians can post news about the library as well as events occurring at the library. The researchers further stated that blogs are also used to create subject guides, as they can be easily updated to reflect the most current sources for a particular class or department. Tripathi and Kumar (2010) advised that libraries should create guidelines for using blogs and other Web 2.0 tools which are easily accessible to students. These guidelines should inform students about basic copyright laws and how to avoid infringement.

**Wikis**

According to Wikipedia, a wiki is defined as “a collaborative web site which can be directly edited by anyone with access to it.” Engard (2006) discussed extensively how libraries can use wikis. The paper gave brief descriptions on the experiences of how wikis were successfully implemented in their web-based library services. Harinarayana and Raju (2010) found that wikis are the least applied of the Web 2.0 features in university libraries in India. Only 1 out of the 57 (1.75 per cent) libraries
studied used a wiki to promote its library-authored resources. According to the researchers, Emory University libraries used the wiki-based facility called ReservesDirect created by librarians to manage electronic and physical library materials reserved for university courses.

Wikis are collaborative tools that are often used for knowledge sharing, knowledge creation, and collaboration on research and other projects. Studies have shown that librarians use wikis to collaborate with librarians in other libraries, and that few libraries use wikis to collaborate with patrons (Kim and Abbas, 2010). Wikis are fertile ground for copyright infringement because anyone with access could copy and paste from any source to which they had access. Wyatt and Hahn (2011) advise that libraries should set up guidelines concerning the content which may be added to the wiki and these guidelines should include basic information about copyright law and how to avoid infringement.

**Instant Messaging (IM)**

Instant Messaging (IM) is also a very useful tool which may help library professionals to provide library services. IM is currently used by many libraries to provide online reference services. “Ask a librarian” services are provided by instant messengers all over the world. A study of top 100 university libraries in India show that IM features have been extensively used in libraries to provide quick online reference services. The study reported that 37 out of 57 (64.91 per cent) of the university library web sites in India have provided facilities for online reference services (for example, “ask a librarian”/“ask us” feature) using IM technology (Harinarayana and Raju, 2010). Reference questions are answered immediately without the need to go to a reference desk. Librarians and patrons both appreciate the fact that instant messaging is faster than traditional chat services, and librarians also like the fact that the software can be downloaded for free (Houghton and Schmidt, 2005).

Hvass and Myer (2008) reported the results of a case study evaluating the introduction of an IM reference services. The study revealed that it was possible to set up an IM service without the need to purchase hardware or software. While IM reference services are somewhat more prevalent compared to other Web 2.0 tool applications such as wikis or podcasts, it is quite underdeveloped in Chinese university libraries (Han and Liu, 2010). From just an interactive feature, IM has evolved into offering not only text messages, but also multimedia resources such as photos, videos, etc. (Harinarayana and Raju, 2010).

**Podcast/vidcast**

Podcasts are audio contents available on the internet that can be automatically delivered to a personal computer or MP3 player (Geoghegan and Klass, 2005). The podcasts give the user an opportunity to listen to recorded intellectual outputs online without any additional software and to download the same for later use. Podcasts and vidcasts have been used successfully in delivering library web-based services (Harinarayana and Raju, 2010). Podcasts have proved to be an effective communication medium into and out of Second Life, and many users have created podcast listening stations and/or are podcasting from Second Life to Real Life (Parker, 2008). Jowitt (2008) conducted a study on the use of library instructional podcasts by the staff and students at the University College of Learning (UCOL). The hope was to provide New
Zealand’s academic and other libraries with a current picture of podcasting into library instruction and an insight into whether this might be a sustainable new technology. The research shows that podcasting for library instruction would benefit UCOL as an institution, showing potential as an alternative communication medium. Abram (2005) suggested several areas of application of podcasts in libraries. They are:

- story hours/story time (record your kiddy librarians);
- information literacy and research help;
- collecting and indexing good free podcasts (found through the podcast search engines);
- local history (collection from veterans, pioneers, local characters, etc.);
- teen book/DVD/game reviews (collected by the circulation desk);
- music collections;
- audiobook collections (on iPods and MP3 players);
- library events (like science fair help, literacy nights, author readings);
- library debate;
- archiving class lecture;
- library marketing podcasts (how to use RSS, databases, VR, etc.);
- training;
- library gadgets petting zoos (staff and patrons); and
- public speaking training (participation with groups).

**Flickr/YouTube**

Flickr allows users to post photographs and to create discussion groups. While Flickr is known largely as a photo sharing web site, it also allows users to post video. Academic librarians post photos of the library and its staff to provide a virtual tour of the library while simultaneously putting a human face to the building. A general search of Flickr reveals that most academic libraries use Flickr to post pictures of the library building and its staff (Farkas, 2007b). Han and Liu (2010) discovered that they could not find any library among the 38 top Chinese university libraries with an account in photo or video sharing sites such as Flickr or YouTube to promote a collaborative community initiative. YouTube provides the user with the ability to save favourite videos, create a playlist, rate videos, make comments about them, and share them with other users (Buckley, 2008). Wyatt and Hahn (2011) advise that libraries that host community photographs, should have a copyright statement policy and should ask that only original photographs taken by the user be uploaded to the site. According to the researchers, if a copyright owner wants material removed, a policy should be in place to handle copyright complaints by the copyright holder and also a rebuttal form for the user who posted the questioned photograph.

**Social bookmarking/tagging**

Social bookmarking is a tool used to mark web pages which a user found relevant, tag them with a keyword which will make them retrievable in the future, and also to send these sites to other users who might find them useful as well (Gorden-Murname, 2006).
An example of social bookmarking software is del.icio.us which was specially created
to organize, store, and increase retrieval in a large collection of bookmarked web sites
(Gorden-Murname, 2006). It has been found that both undergraduate and graduate
students use the bookmarking function very frequently when it is offered by the
library (Kim and Abbas, 2010). In order to meet the patrons' needs, many libraries have
made their sites more attractive by offering bookmarking, tagging, and the ability to
add book reviews/ratings/summaries.

Studies have shown that only few libraries offer these services, and often only the
bookmarking service is offered, which means the ability to tag bookmarks and share
them, hence the “social” in social bookmarking, is lacking (Kim and Abbas, 2010;
Garoufallou and Charitopoulou, 2011). The reason why social bookmarking is so
underutilized in libraries has to do with the function of tagging. Tags are basically
user-created subject headings. According to O'Reilly (2007, p. 23) “tagging allows for
the kind of multiple, overlapping associations that the brain itself uses, rather than
rigid categories.” Some academic libraries have added LibraryThing to their catalogue,
which enables patrons to add tags and recommendations to books which they have
read (Mendes et al., 2009). Book reviews, rating of books, and book summaries also
enable patrons to become involved in the library as a community (Wyatt and Hahn,
2011).

Methodology
A questionnaire structured by the researchers was used to collect data on awareness
and use of Web 2.0 tools among librarians in university libraries in Nigeria. It was
administered using the online method. The questionnaire was sent to 321 librarians in
various university libraries via e-mail starting in April 2012. Their e-mail addresses
were collected from the “Practicing Librarians in Nigeria” list published by the
National Library of Nigeria. In order to increase the return rate, librarians were sent
reminders by e-mail after two weeks. Data collection was completed by September,
2012. In total, 176 respondents from 49 university libraries in Nigeria responded to the
questionnaire with a response rate of 54.8 per cent. Copies of the completed
questionnaires that were sent back to the researchers through e-mail attachment were
downloaded, printed, and used for the analysis. Data was analysed using percentages
and presented using tables and bar charts.

Data analysis
Demographic characteristics of respondents
Out of the 176 respondents, 106 (60.2 per cent) were male, while 70 (39.8 per cent) were
female. The participating professionals were asked to state their qualifications and
designations. Among the 176 respondents, 52 (29.5 per cent) hold bachelors degree, 106
(60.2 per cent) hold Masters degrees, while 18 (10.2 per cent) are PhD degree holders in
library and information science. Regarding designations, 54 (30.7 per cent) were
Assistant Librarians, 51 (29 per cent) were Librarian IIs, 27 (15.3 per cent) were
Librarian Is, 16 (9.1 per cent) were Senior Librarians, nine (5.1 per cent) were Principal
Librarians, nine (5.1 per cent) were Deputy University Librarians, and ten (5.7 per cent)
were holding the position of University Librarian.
Discussion

Level of awareness of Web 2.0 tools by librarians in university libraries

Librarians were asked to indicate whether they know, do not know, or have only heard of Web 2.0 tools (see Table II). Social networking (Facebook, Twitter, etc.) was the most popular with librarians (89.2 per cent), while 5.1 per cent indicated that they didn’t know about social networking and 5.7 per cent indicated that they have only heard about social networking. Instant Messaging (IM) was well known among the librarians studied (77.3 per cent), while 10.8 per cent didn’t know about the tool and 11.9 per cent had only heard about Instant Messaging. More than half (66.5 per cent) of the librarians indicated that they know about media sharing sites, while 14.2 per cent indicated that they were unaware of media sharing sites, and 19.3 per cent had only heard about media sharing sites. Blogs were familiar to 60.8 per cent of the librarians sampled, 17.6 per cent were unaware of blogs and 21.6 per cent indicated they had only heard about blogs. Wikis were known to 59.1 per cent, while 19.3 per cent indicated that they did not know about them and 21.6 per cent indicated they had only heard about wikis. RSS feeds and social bookmarking sites were the least known Web 2.0 tools with 42 per cent and 44.9 per cent of the respondents agreeing that they knew about these services respectively.

In this study, social networking sites like Facebook and Twitter were seen to be the most popular social networking sites known to the librarians in university libraries in Nigeria. This finding is in line with several others studies that have reported social networking sites like Facebook to be the most popular Web 2.0 tool used. For example, Harinarayana and Raju (2010) found that Facebook was the most popular and was being used in three libraries in their investigation of university library web sites in India. There are numerous arguments as to whether librarians are welcome within social networking spaces, such as Facebook, Twitter, social bookmarking, and others, yet this is where the majority of library users are communicating. Hence, Wang (2011) stated that “we have tried hard to attract users to come to us, but (now) maybe it is now time for librarians to go bravely into the outside world and change others’ perceptions in all kinds of non-library setting.” Farkas (2007c) reminds us that there is no point in just being where library users are; what is necessary is being useful by providing access to resources, interactive reference services and information literacy sessions.

Use of Web 2.0 tools by the librarians

On the question of the frequency of use of the Web 2.0 tools by the librarians, the respondent librarians were asked to rate their use of different Web 2.0 tools with a

<table>
<thead>
<tr>
<th>Web 2.0 technologies</th>
<th>I know %</th>
<th>I do not know %</th>
<th>Only heard %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blogs</td>
<td>107</td>
<td>60.8</td>
<td>31</td>
</tr>
<tr>
<td>Wiki</td>
<td>104</td>
<td>59.1</td>
<td>34</td>
</tr>
<tr>
<td>RSS feeds</td>
<td>75</td>
<td>42.6</td>
<td>50</td>
</tr>
<tr>
<td>Social networks (Facebook, Twitter, etc.)</td>
<td>157</td>
<td>89.2</td>
<td>9</td>
</tr>
<tr>
<td>Instant messaging (IM)</td>
<td>136</td>
<td>77.3</td>
<td>19</td>
</tr>
<tr>
<td>Social bookmarks</td>
<td>79</td>
<td>44.9</td>
<td>47</td>
</tr>
<tr>
<td>Media sharing</td>
<td>117</td>
<td>66.5</td>
<td>25</td>
</tr>
</tbody>
</table>

Table II.
Level of awareness of Web 2.0 tools among librarians

Note: n = 176
scale ranging from 1 to 5, where 1 indicated no use and 5 indicated frequent use (see Table III). The results show that the most frequently used Web 2.0 tool is Facebook. It was used by 46.6 per cent of the librarians, followed by Twitter with 35.2 per cent, Instant Messaging with 25.6 per cent, YouTube with 14.8 per cent, Wikis with 11.9 per cent and blogs with 10.8 per cent. On the other hand, there was little use of tools such as social bookmarking (7.4 per cent), Flickr and RSS feeds (5.1 per cent each), and Podcasts (2.8 per cent).

Some of the benefits of using Web 2.0 tools are to communicate internationally, faster dissemination of information, and to connect with people outside the university environment. Recent statistics of internet and Facebook usage show that as of December 31, 2012 there were about 4,369,740 Facebook users in Nigeria (Internet World Stats, 2012). This finding is in agreement with earlier studies that the most frequently used Web 2.0 tool by academic librarians is Facebook (Garoufallou and Charitopoulou, 2011; Harinarayana and Raju, 2010).

In the current study, Instant Messaging was seen to be the third most used Web 2.0 tools by the librarians in university libraries in Nigeria. This finding agrees with the findings of Liu (2008) that IM had been employed in almost all libraries considered in that study. Usage of Web 2.0 technologies varies from one place to another. For example, Arif and Mahmood (2010) in their study of the adoption of Web 2.0 in Pakistani libraries revealed that the maximum usage of Web 2.0 technologies was instant messaging followed by social networking. YouTube, wikis, and blogs were also indicated to have been used by the librarians. Blogs have been seen as an important virtual space and contains valuable information like any other scholarly information channel. Blogs are used for providing subject guides, publishing library newsletters, publishing current events and so on (Harinarayana and Raju, 2010). The present study revealed that social bookmarking, Flickr, and RSS feeds were indicated by the librarians in university libraries to be the least used Web 2.0 tools. Contrary to findings by Nguyen (2008), among Web 2.0 technologies utilized by Australasian university libraries, RSS was the most widely applied technology.

**Use of Web 2.0 tools**

Librarians were asked to select the purposes for which they use Web 2.0 tools (see Figure 1). More than half of the librarians surveyed (66.5 per cent) indicated using Web

<table>
<thead>
<tr>
<th>Web 2.0 technologies</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>18.8</td>
<td>9.7</td>
<td>13.6</td>
<td>11.4</td>
<td>46.6</td>
</tr>
<tr>
<td>Flickr</td>
<td>60.2</td>
<td>11.9</td>
<td>15.3</td>
<td>7.4</td>
<td>5.1</td>
</tr>
<tr>
<td>YouTube</td>
<td>40.9</td>
<td>14.8</td>
<td>19.3</td>
<td>10.2</td>
<td>14.8</td>
</tr>
<tr>
<td>Instant messaging</td>
<td>30.1</td>
<td>13.1</td>
<td>17.0</td>
<td>14.0</td>
<td>25.6</td>
</tr>
<tr>
<td>Blogs</td>
<td>44.3</td>
<td>12.5</td>
<td>14.8</td>
<td>17.6</td>
<td>10.8</td>
</tr>
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<td>Wikis</td>
<td>44.9</td>
<td>12.5</td>
<td>11.4</td>
<td>19.3</td>
<td>11.9</td>
</tr>
<tr>
<td>RSS feeds</td>
<td>56.8</td>
<td>15.3</td>
<td>13.6</td>
<td>9.1</td>
<td>5.1</td>
</tr>
<tr>
<td>Podcasts</td>
<td>63.1</td>
<td>15.9</td>
<td>13.6</td>
<td>4.5</td>
<td>2.8</td>
</tr>
<tr>
<td>Social bookmarks</td>
<td>50</td>
<td>17.0</td>
<td>15.3</td>
<td>10.2</td>
<td>7.4</td>
</tr>
<tr>
<td>Twitter</td>
<td>15.3</td>
<td>15.3</td>
<td>15.9</td>
<td>18.2</td>
<td>35.2</td>
</tr>
</tbody>
</table>

**Table III.**

Use of Web 2.0 tools

*Note: 1 least – 5 most, in % n = 176*
2.0 tools for online reference services, followed by 60.2 per cent who indicated using Web 2.0 tools for Library news/events. About 59.7 per cent indicated using Web 2.0 tools as training resources, while 55.1 per cent indicated using the photo and video sharing site for image and video sharing. Other purposes for which the librarians use some of the Web 2.0 tools are social tagging and bookmarking (51.7 per cent), collaborating with colleagues in other libraries (46 per cent), and blogging (40.9 per cent). These findings are in line with findings from other regions of the world (Han and Liu, 2010).

This study has revealed that librarians in university libraries in Nigeria use Web 2.0 tools mostly for online reference services, library news/events, training resources, image and video sharing, and social tagging and bookmarking. These findings reinforce earlier findings that libraries utilize really simple syndication (RSS) feeds, blogs, and Twitter to keep patrons abreast of library events, collections, new books, and other new resources that may be of interest to patrons (Wyatt and Hahn, 2011). The interactive nature of these services lends themselves to the building of a viable community of library users. For example, the Pennsylvania State University created a university-based social bookmarking web site called PennTags, a private bookmarking community for members of the university to tag online resources and items, as well as resources tagged by fellow students and faculty members (Dickson and Holley, 2010). According to Dickson and Holley (2010, p. 474) “the university of Pennsylvania library PennTag is probably the best example of the use of social bookmarking in university library web sites. Users can easily tag the items they find useful while searching the Pennsylvania library’s online catalogue.”

The results of these findings suggest that university libraries in Nigeria can improve on the services that can connect patrons to each other in the Web 2.0 world, as...
the principal use of Web 2.0 technologies in the library has been for outreach and marketing purposes (Deyrup, 2010). All of these are marketing attempts by the library to draw in new patrons, even if only virtually, to use their resources and to create a larger information user community.

**Means of skills acquisition for the use of Web 2.0 tools by librarians in Nigerian university libraries**

Librarians were asked to indicate the means through which they acquire skills for the use of Web 2.0 tools (see Figure 2). More than three-quarters (79.5 per cent) indicated acquiring the skills through self-practice; more than half of these librarians (69.9 per cent) indicated acquiring the skills through friends/colleagues; and about half (57.4 per cent) indicated acquiring the skills through workshops attended. Only 22.7 per cent indicated acquiring the skills through library schools. This verifies suspicions that many librarians may not have acquired the skills of using Web 2.0 tools from the library schools. The study revealed that librarians in university libraries in Nigeria acquire the skills for the use of Web 2.0 tools mainly through self-practice, friends/colleagues, and attendance at workshops. This calls for the inclusion of a separate course on Web 2.0 tools in Nigerian library schools. Emphasising the need for incorporating a “Web 2.0” course in library schools’ curriculum, Rehman and Shafique (2011) stated that “it is necessary to get formal trainings from experts.” Teaching about Web 2.0 tools in Nigerian library schools will prepare the next generation of library staff for the challenges ahead.

**Barriers librarians in Nigerian university libraries face when using Web 2.0 tools**

There are bound to be hindrances in the introduction of new technologies into a work setting. There is no doubt, therefore, that the use of Web 2.0 tools in libraries in developing countries like Nigeria will be problematic for the librarians in these
institutions. For that reason, librarians were asked to indicate the barriers they encountered in using Web 2.0 tools (see Figure 3). The majority of the librarians sampled (76.7 per cent) indicated lack of facilities such as modern computers with internet access to use Web 2.0 tools as a major barrier. This finding agrees with Rehman and Shafique (2011) that lack of computer literacy, unavailability of computers and internet facilities were the main hindrances toward the adoption of Web 2.0 technologies in Pakistani libraries. Constant internet access in the university libraries in Nigeria is a sine qua non in the use of Web 2.0 tools. Baro and Asaba (2010) in their study of internet connectivity in university libraries in Nigeria, revealed that only a few university libraries (despite the laudable directives from the National Universities Commission (NUC)), have stable and reliable internet access in their libraries. If librarians in university libraries are to fully utilize Web 2.0 tools to enhance their service delivery, modern computers with stable internet access must be made available in university libraries.

Secondly, almost three-quarters (70.5 per cent) of the librarians sampled indicated a lack of skills to their effective use of Web 2.0 tools. For librarians to remain relevant in this digital era, training and re-training is required. Professional bodies in collaboration with non-governmental organisations can provide training on skills acquisition in the use of Web 2.0 tools. Also, 55.7 per cent of the librarians sampled indicated lack of time to use Web 2.0 tools as a deterrent. This reinforces the earlier finding of Boxen (2008) that librarians’ lack of time is a major concern in the acquisition of skills for the use of Web 2.0 tools, particular with social media games that are often labour-intensive. According to Dickson and Holley (2010, p. 476) “libraries must create guidelines on response time to answer student questions on social networking platforms [. . .] These guidelines must address staff absences and vacations so that the social networking services remain consistent while still allowing librarians to take vacations or attend conferences.” Information users expect timely responses to any inquiries sent through social networking tools. They are unlikely to return to social networking tools for library assistance if librarians do not respond quickly to inquiries.

Figure 3. Barriers librarians face in using Web 2.0 technologies

![Bar chart showing responses to barriers in using Web 2.0 technologies]

- Lack of time: 55.7
- Lack of skills: 70.5
- Lack of facilities: 76.7
Conclusion
The study showed that librarians in Nigerian university libraries are more familiar with social networking sites, instant messaging, media sharing sites, blogs and wikis. They know very little about RSS feeds, social bookmarking, and podcasts. The popularity of social networking sites like Facebook and Twitter made these frequently-used tools by Nigerian librarians. Other Web 2.0 tools used by the librarians are instant messaging, YouTube, blogs and wikis. Web 2.0 tools like Flickr, RSS feeds, podcasts, and social bookmarking were among the least used. This could be due to lack of awareness, lack of skills, or lack of time. The study revealed that librarians in Nigerian university libraries use Web 2.0 tools mostly for reference services online, library news/events, training resources, and image and video sharing. These librarians acquired the skills for using Web 2.0 through self-practice, friends/colleagues, and workshops. Lack of facilities such as computers with internet access, lack of skills, and lack of time were indicated as some of the barriers in using Web 2.0 tools by the librarians in university libraries in Nigeria. In order to remain relevant, libraries need to become part of the popular Web 2.0 universe to effectively serve their patrons. Many enthusiastic librarians around the world are implementing Library 2.0's tools in different kinds of library settings and creative programs, and trying to engage information users in new ways.

The development of internet technologies has led to new ways of allowing libraries to make use of collective intelligence. Librarians having been aware that numerous users flock to YouTube, Facebook, Twitter, and various blogs, and want to get people to use social networking tools to access the library’s rich resources and services. One of the purposes of creating a social networking presence is to build a library community of users. Dickson and Holley (2010) cautioned that though social networking by academic libraries has the potential to reap great results, librarians must consider the most effective methods for their particular library and users population.

Librarians in university libraries in Nigeria need to embrace Web 2.0 tools for effective service delivery in this digital era. They must be proactive in their attempts to adopt and use Web 2.0 tools. Users’ ratings, reviews, comments and tags all present ways for libraries to engage their users, take advantage of their contributions and generate additional metadata to enrich the catalogue. Librarians should continue to play the role they have always played as facilitators between information and the end users.

Recommendations
Based on the findings of this study, the following recommendations are made:

• Library schools should re-design their school curricula to incorporate a course on Web 2.0 to enable them to prepare future librarians for the new challenges ahead.

• Tertiary Education Trust-Fund (TET-Fund), Nigerian universities, Librarians Registration Council of Nigeria (LRCN) and Nigerian Library Association (NLA), in collaboration with non-governmental organizations, should regularly organize capacity-building workshops on Web 2.0 tools usage.

• University management should provide the necessary facilities, such as computers with constant and reliable internet access, to be able to use Web 2.0 tools in Nigerian university libraries.
References


Further reading

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Appendix

Awareness and Use of Web 2.0 Technologies by Librarians Questionnaire (AUWTLQ)

The Library
Niger Delta University
Bayelsa State
8th April, 2012

Dear Sir/Madam,
I am a Librarian conducting research on the above mentioned topic. I therefore solicit your help by providing answers to the following set of questions. I promise that the information obtained through this exercise will be strictly used for academic purpose.

Thanks for your anticipated co-operation
The researchers

Please complete the following information about your background

Name of University ---------------------------------------------
1. Gender (a) Male [ ] (b) Female [ ]
2. Qualification (a) BLS [  ], (b) MLS [  ], (c) Ph.D [  ]
3. Staff Position/Designation ---------------------------------

1. To what extent are you aware of the following Web 2.0 technologies? Tick (√) as appropriate.

<table>
<thead>
<tr>
<th>Web 2.0 technologies</th>
<th>I know</th>
<th>I don’t know</th>
<th>Only heard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blogs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wikis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSS Feeds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social networks (facebook, twitter, etc)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instant Messaging (IM)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social bookmarking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Media sharing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Rate your use of the following Web 2.0 tools?

<table>
<thead>
<tr>
<th>Web 2.0 tools usage</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flickr</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YouTube</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(continued)
3. For what purposes have you used Web 2.0 tools?

<table>
<thead>
<tr>
<th>Purposes</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library news/events</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reference services online</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blogging</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image and video sharing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaborating with colleagues in other libraries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social tagging &amp; bookmarking</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Others please specify

4. Through what means did you learn the skills to use Web 2.0 tools?

<table>
<thead>
<tr>
<th>Means of acquiring skills to use Web 2.0 tools</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learnt through self-practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Through Friends/Professional colleagues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Through library school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Through workshops</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Others please specify

5. What are some of the barriers librarians face in using Web 2.0 tools?

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of facilities (e.g. computers with internet access)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power failure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Others please specify

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Figure A1.