Webometric Ranking and Nigerian Private Universities: A Case Study of Bells University of Technology, Ota

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Abstract
The Case study research method was adopted to evaluate the possible chances of Bells University of Technology, Ota, Nigeria, in Cybermetric Research Group's webometric ranking. Observation, questionnaire and webometric analysis using Google Search Engine was adopted as methods of data collection. The sampled academics comprised those that had spent at least six months as academic staff of the University. Therefore, 30 academics comprised the sample population. Only 4 of them had disengaged while 26 are still in the services of the University. It was, however discovered that the University's academic staff composition was made up of mostly young academic staff. It was also revealed that the University's website domain name needs to be assessed and changed to suit the required domain name for universities. It was observed that the University's Internet facilities were very reliable, and that research and publication activities in the University were encouraging. A good number of the respondents own PCs and Laptops and were also aware of the importance of the web to research, and as such make significant use of the web for their research and publications. The article concludes that the University possess high prospect of ranking top in webometric ranking in the future.

Introduction

The World Wide Web has rapidly become global machinery for the propagation of academic findings as well as a very reliable tool for communication among scholars. It has changed the face of major academic disciplines and the way they report their research findings. The increase in the use of the web for research has led to the evolution of web bibliometric, popularly referred to as webometric. Webometric evolved because of the impact of the web to scholarship. It has become a challenge to Nigerian universities, especially the newly evolving private universities, as they must face the challenges of adopting the web and related technologies for academic activities in a meaningful and systematic manner. Since webometric seeks to categorize universities to those that have meaningfully adopted the web for research, teaching and learning and those that have not, research into it has become imperative.

Background

In the recent past, university education in Nigeria has been given a face lift. The expansion of the university education sector in Nigeria in 1999 to accommodate private owners is a very good example of recent improvement in the sector. Consequently, IT and Internet acquisition and use have been continuously supported by government and initiated and implemented by stakeholders. As a result, Nigerian universities have

started building a culture of utilizing the web for research, teaching and learning. Most of them now have Internet connections and frequently up-dated websites.

To compliment current growth and development in web utilization in the sector, the National Universities Commission (NUC) has introduced various monitoring exercises. One of such exercises is the follow-up of the newly introduced webometric ranking, coordinated by Cybermetric Research Group (formerly Internet Laboratory), an organization based in Spain. The objective of webometric ranking is "to show the commitment of institutions to Web publication and to the open access initiatives" (http://www.webometrics.info/).

However, in the January 2006 ranking, Nigerian universities performance was poor. Only five Nigerian universities were listed among Africa's top 100 universities. They were poorly ranked below the top 50 universities in the continent (NUC, 2006a). The first among them, the University of Ibadan, ranked 57th; Obafemi Awolowo University, ranked 69th; University of Benin, ranked 78th; University of Lagos, ranked 90th; while University of Jos, ranked 98th. South African universities dominated the ranking, while universities from less endowed African countries like Tanzania, Zimbabwe, Namibia, Kenya, Uganda, to mention but a few, also ranked ahead of Nigerian universities.

Furthermore, the July 2006 ranking released in September, 2006 listed only four Nigerian universities, leaving out Universities of Lagos and Jos, which ranked 90th and 98th respectively in the January, 2006 ranking. The four listed Nigerian universities ranked 53rd, 72nd 87th and 100th among top African universities. The 100th university, however, is a private university, a development which is welcoming (www.webometrics.info/).

NUC (2006a), however, listed the following as factors responsible for Nigerian universities' poor performance:
- Scant attention paid to presenting findings of research conducted by scholars in Nigerian universities in a web-searchable form which manifests in
  a. Publishing in low impact local journals without Internet links.
  b. Non-publishing in electronic journals
- Absence of Nigerian universities on the Internet in a form that can be picked by the radar of Cybermetric Research Group.
- Lack of up-to-datedness and scanty content of the websites of Nigerian universities.

This research was carried out to evaluate the extent of readiness of Bells University of Technology, Ota, Nigeria for webometric ranking. The factors evaluated are drawn from the factors outlined by NUC (2006a). The significance of this paper is that the research presented data that can be used to access the readiness of other private universities in Nigeria as most of them share the same characteristics.

Bells University of Technology
Bells University of Technology (Bellstech), Ota, the premiere private university of technology in Nigeria was established by the Bells Educational Foundation. The University received her operational license from the Federal Government of Nigeria through the NUC in June 9, 2005 and began academic activities in July, 2005, at its take

off campus in Ota. Her pioneer students were admitted in October, 2005. (Bellstech, 2005)

What is Webometric?
The term webometric is a coinage from two modern English language words, "web" and "metric." The word web is a short form of World Wide Web. The Dictionary of Science defined web as: "a hypermedia system…that allows users to view and retrieve information from "documents" containing links." On the other hand, metrics has to do with counting or measurement. Webster's Comprehensive Dictionary of English Language defined metrics as "the mathematical theory of measurement."

Webometric, then, describes counting or measuring web resources in mathematical value. It defines the extent of Web usage for research. Since the web allows documents to be linked together, the measurement of these links forms the fabrics of webometric. NUC (2006a) defined webometric as web "measured on the basis of web characteristics or presence on the Internet." Therefore Webometric is based on two indicators:
a. Volume of published materials of institutions/individual on the web, and
b. The visibility and impact of the web pages measured by the sitation (site citations) or links they receive (NUC, 2006a)

Benefits of Webometric Ranking
The evolution of webometric ranking of universities is as a result of the need to measure universities' adoption of the web for research, teaching and learning. Those universities that rank top, presumably, are those that have integrated the web into their research, teaching and learning culture. They tend to have more resources in the web, and also tend to have more links to and from other sites. They are therefore perceived to be more globalized. This increases their perceived impact, improves their visibility and makes stakeholders perception about them positive. Smith (2004) gave a vivid picture of the benefit and motive for web links which are adoptable to universities with frequent and high volume of links. NUC (2006a) on its part have outlined two major set backs a university may face if it is ranked low in webometric:
- Lowering of the esteem of the university in the eyes of stakeholders, especially potential students and funding agencies.
- Academic exchange with reputable universities from other parts of the world for teaching and research may suffer.
Steiner (2006) nevertheless pointed out that "…there is not a singular parameter that expresses the university excellence…"

Objectives of the Study
The primary objective of the study was to carryout an evaluation of Bells University of Technology's use of the web for its academic activities and therefore, initiate her readiness for webometric ranking. To achieve this, the study's specific objectives are:
  i. To evaluate the University's website with regards to its comprehensiveness, content and up-to-datedness.
  ii. To determine if academics in the University have personal websites registered in the University's domain name.

iii.   To find out if academics in the University use and/or publish their research findings using
   a.   the web
   b.   web-based outlets like electronic journals, open access journals, e-prints etc.
   c.   paper journals with Internet links
iv.   To study personal ownership of facilities like computers/laptops, scanners, digitizers, etc. aid digitization and web publishing.

Methodology

The methods of data collection used for the study are observation, questionnaire and webometric analysis. However, the three methods adopted served as compliments to one another because of the characteristics of the entities (web facilities, web utilization and web presence) assessed.

Questionnaire

A two-page questionnaire with six segments was designed and used to collect data from the academics on:
✓ Demographic status
✓ Ownership of facilities that aid digitization and web publishing by academics
✓ Use of Internet
✓ Ownership of websites and the addresses of such websites
✓ Use of web based research dissemination media
✓ Number and titles of papers authored by Bells University of Technology academic staff.

The questionnaire enabled the researcher to directly seek the opinion of the academics on the factors relating to their utilization of the web.

Observation

Observation was used to evaluate the University's website and websites owned by academic staff of the University, if there is any. This was carried out to know websites domain names adopted by the university and those academic staff that have websites, the websites' comprehensiveness, regularity of up-dating them, and if their domain names are integrated.

Webometric Analysis

A make-shift webometric analysis was carried out using Google Search Engine. The University's name was used as search term using the Advanced Search Interface in order to have tighter control on term coordination. Irrespective of the fact that general search engines have not been found comprehensive for this kind of study (Bar-Ilan, 2005 and Baeza-Yates, Castillo and Lopez, 2006), it is assumed that Google should be able to present a result that would enable the researcher present a glimpse of how the University is represented in the web.

Population and Sample Population
The academic staff of the University constitute the population of the study. The categories highlighted below are identified in the study population:

- Those still in the University's service that have spent at least six months as staff of the University.
- Those who are no more in the University but have spent at least six months as academics of the University before disengaging.
- Those presently employed by the University; who have not spent up to six months as academics staff of the University.

The sample population comprised those academics that have spent at least six months as academic staff of the University. It followed that, the third category were not included as part of the sample population. Nevertheless, the second category were only included in the webometric analysis. Their academic works, once retrieved as hits, were accepted for the study in as much as they indicated the University's name as their institutional affiliation on the papers accessed. The first category responded to the questionnaire and was also used for the webometric analysis. Consequently, the academics eligible as sample population are thirty in all. Four are in Category 2, while twenty six are in Category 1. two academics in Category 1 were not available for the study, therefore, 24 academics eventually formed the sample population.

Findings and Discussion
The findings were based on responses from 4 academics in College of Food Technology (COLFOOD), 14 academics in College of Natural and Applied Sciences (COLNAS), 2 academics in College of Information and Communication Technology (COLINFO), 2 Academic Librarians and 2 academics from Center for Foundational Education (CENFED). This amounts to 24 academics in all. COLNAS has more academic staff than other Colleges and units of the University; hence, they formed more than half of the respondents. However, the respondents include 15 (62.5%) male and 9 (37.5%) female academics. The male-female difference trend in Nigerian academic staff distribution has been revealed when Okebukola (2005) observed that of the 20,214 lecturers in Nigeria, only 3,174 (15.7%) are females while 17,040 (84.3%) are males.

Also, majority of the respondents are in the low cadre of academic line. 11 (45.75%) are Lecturer II, while 10 (41.6%) are Assistant Lecturers. This means that about 87.3% of the respondents are in the low academic line. This corroborates the finding of NUC in 2005 Nigerian Universities accreditation, where it was revealed that 60% of academics in the country are junior academics (NUC 2006b). However, 1 (4.2%) is a Lecturer I; 2 (8.3%) are Senior Lecturers; while only 1 (4.2%) is an Associate Professor. Respondents years of academic experience are relatively low considering the fact that 12 (50.0%) of them have less than five years academic experience, while11 (45.8%) have five and above years experience. 6 (50.0%) of those who have spent less than 5 years experience have only 1 year experience as academics. These data revealed that the academics under study are young in the profession and this confirms why they are primarily of the low cadre.

Bells University Website Comprehensiveness and Up-to-datedness

Bells University of Technology's website address is www.bellsuniversity.org. The domain name chosen is not in conformity with Ferrel's (2004) and Darlington (2005) positions that "org" is meant for organizations such as a club, non-governmental organizations, etc. and that the most appropriate domain name for universities is "edu."
That apart, the University's website is made of 19 internal links and 9 external links. Major internal links in the website are in the home page and they cover, Home; About Us; Admission; Programmes; Research; Library; Academic Activities; Organizational Structure; Staff; Contact Us; and Mail. External links, on the other hand, are links to Nigerian newspapers. The evaluation of the links is presented below:

Table 1: Number of Links in Each Internal Link

Links	No. of Links	Remarks
Homepage	23	Comprehensive, simple and made with textual anchors
About Us	3	Comprehensive
Programmes	6	Very Comprehensive
Research	3	Not Comprehensive and did not contain any abstract or full text of research conducted by academics in the University.
Library	0	Content not comprehensive
Academic Activities	3	Not comprehensive, two are under construction; only one is fully completed but contains dated information and also full text of one of the University Lectures.
Organizational Structure	16	Very comprehensive with photographs of principal staff.
Staff	10	Very comprehensive and also contains photographs of principal staff
Contact Us	5	Comprehensive with five –mail links for contacting the school

The University's website is regularly updated and comprehensive in terms of its content development and links, except for pages on Research, Library and Academic Activities. Every relevant subject expected to be included in a university's homepage is available as links in the homepage. However, basic areas like Research, Library and Academic Activities which could support frequent links from other web users and which comply with open access initiatives are still not well developed. Hence, in its present state, the University's website can not attract top webometric ranking.

ICT Facility Ownership

The researcher presumes that if the respondents personally own ICT facilities like Personal Computers (PCs), Laptops, Printers, Scanners, etc., that the possibility of using the web for research would also become evident since these facilities are Internet tools. Xioaming and Kay (2004) and Ezeani (2005) had earlier opined that technological infrastructure available to a country and/or individual remains one of the major draw backs of electronic resources used.

Table 2: Distribution of ICT Facilities Owned by Respondents

ICT Facilities	No Owned	Percentage
PCs	13	54.0
Laptops	7	29.2
Printers	8	33.3
Digital Cameras	2	8.3
Scanners	0	0
Papers	0	0

More than half of the respondents have PCs, about a quarter of them have Laptops, while only 2 (8.3%) own digital cameras. None of them own scanners and pagers. With this, the problem of availability of technology at the individual level is not apparent in the University. We can make assumption that the University's academics have basic tools required to make use of the Internet and the web. On the other hand, based on the number of respondents that own digitizing technologies, we can presume that the possibility of converting academic resources in the University to digital form is slim. This negates Cybermetric Research Group indication that the possibility of converting paper based academic resources to digital form by universities is one primary area that helps universities rank among the top universities (www.webometric.com).

Also revealed in the Table above is the fact that none (0.0%) of the respondents has Internet facilities at home to access the web. Xiaoming and Kay (2004) observed that economic power determine Internet connection ownership and penetration. This confirms the low Internet penetration and ownership rate in Nigeria and the whole of Africa as released by Internet World Stats in www.internetstats.com. We can then assume that PCs and Laptops own by the respondents are used for purposes not related to the web due to lack of Internet in their homes.

Use of the Web
The study revealed that, 15 (62.5%) of the respondents use the web very often, 4 (16.7%) use it often while 5 (20.8%) use it occasionally. These data show that all the respondents use the web. It was further revealed that the respondents rely more on the University's Computer Center than they do commercial cyber café kiosks anytime they want to use the web. In fact, 23 (95.8%) of them use the University's Computer Center, while 15 (62.5%) of them also use commercial centers. The respondents, therefore, use both the University's Computer Center, and commercial centers. The estimated, 20 (83.3%) of those who use the University's Computer Center agreed that the Internet facilities there are very reliable, while only 3(12.5%) claimed that the facilities are not too reliable. Jagboro (2003) observed that quick access to the Internet, especially in offices and departmental levels would significantly increase its use. From the result above, we can assume that the frequency of the use of the web is as a result of the reliability of Internet facilities available in the University.

Table 3: Description of Web Usage

Web Usage	No	Percentage
Getting Information for Research	21	87.5
Getting facts/data	17	70.8
News and General Information	15	62.5
Access Electronic Journals	17	70.8
Group Communication	16	66.7
Leisure	7	29.2
E-mails	21	87.5
Access Call for Papers	13	54.2
Access Information on Conference	9	37.5

Table 6 shows that the respondents significantly rely on the web in their quest to carry out their academic activities. It also revealed that they have strong awareness of the importance of the web to research. Papin-Rancharam and Dave (2005) have opined that awareness is among the major factors that determine academic use of open access

initiatives and the web for research. The Table revealed significant use of the web for getting data and information for research, accessing electronic journals, accessing call for papers and group communication with colleagues. All these activities are research and academic related activities. This confirms Jagboro (2005) findings that the use of the Internet for accessing the web is particularly significant in Nigeria universities.

Personal Website Ownership
Antleman (2004) observed that majority of academics who disseminate their research, do so in web-based outlets; and through the use of open access initiatives used their personal websites. The study has however, revealed that none of the respondents has a personal website. The possibility of sharing research through their personal websites has been ruled out. This also means that the possibility of having a combination of the University's website and academics' websites as sources of webometric ranking data has been eliminated. Irrespective of this, 10 (41.7%) of the 15 (62.5%) respondents who indicated that they belong to academic/professional organizations that have websites, use the websites of these organizations to share ideas on their research.

This means that if the University's website is improved, and staff are encouraged to have personal websites, that respondents in a way possess potential to use them for research and for open access initiatives. One can presume that the quality of the University's website and the inability of the respondents to own personal websites have limited their use of the web for academic activities, which may have benefited the University during webometric analysis by Cybermetric Research Group.

It worth mentioning that, 12 (50.0%) of the respondents have used web based academic papers when carrying out research and for other academic activities. This is coupled with the fact that 17 (70.8%) of them have posted their papers in the web, while only 7 (29.2%) have not. In all, 39 papers have been posted on the web. Considering in all, the years of academic experience, cadre and the number of the academics studied, it is obvious that research activities in the University is encouraging. This trend is quite favourable to webometric ranking expectations as the recorded high volume could also translated to high rate of sitation.

Also, only 7 (27.2%) respondents of the 17 (70.8%) who have posted their academic papers (pre-prints, journal articles and conference papers) on the web have actually published the papers. 15 (38.5%) of the 39 (100.0%) papers are reported to have been published. Although this is less than half of the number of papers posted, the respondents, however, indicated that some of the papers are still undergoing editorial processes. Consequently, if the numbers papers published are considered we can conclude that the University can not be listed among top African universities. This is because academics are more likely to cite peer reviewed papers than they would pre-print papers.

Table 4: Distribution of Web Published Papers by Colleges and Academic Units

Colleges/Academic Units	Number	Percentage
COLNAS	6	35.3
COLFOOD	6	35.3
COLINFO	3	17.6
UL	2	11.8
CENFED	0	0.0
Total	17	100.0

COLNAS and COLFOOD have the highest contribution of academic papers emanating from the University in the web. This is followed by COLINFO and the UL. CENFED has not published any paper in the web. This confirms the claim that web publication and open access initiative adoption is discipline sensitive. Humanity and Social Science disciplines have not been too eager to adopt web based scholarly publication models.

Webometric Analysis
Table 5: Distribution of Web Search Hits*

Hit Description	No.	%
The University's Homepage	1	7.1
News	6	42.9
Conference Paper	1	7.1
Conference Programme and Schedule	1	7.1
Journal Article (open access journal)	1	7.1
Wikipedia	1	7.1
Others	3	21.6
Total	14	100.0

*Search was carried out November 1, 2006.

In the webometric analysis results, 14 hits were recorded. Majority of the hits were news carried about the University in Nigerian daily newspapers. It has been observed above that the only external links the University Homepage has are links to daily newspapers in Nigeria. The effect of this came to play as 6 (42.8%) of the hits are links to news about the university. Only 1 (7.1%) is conference paper, while 1 (7.1%) full text of journal article was included. Other hits are 1 (7.1%) conference programme and paper delivery schedule, 1 (7.1%) contribution to Wikipedia, and 3 (21.4%) hits that were categorized as others. This category includes links to friendship forum, profession lists, and related non-academic websites.

However, it is important to note that only 2 (5.1%) of the 39 (100.0%) paper posted in the web was returned as hits. The 2 (5.1%) papers have been published as conference paper in conference organizers' website and research article in open access journal. This translates to 11.8% of the 17 (100.0%) papers the respondents claimed they have published in the web. Other published papers may have been posted in websites that have not been retrieved for indexing in Google. This may be as a result of the quality of the website involved or other reasons outlined by Bar-Ilan (2005) about the reliability of using search engines for web research.

Conclusion and Recommendations
Basic factors like experienced academics, volume of research in the web, University's website domain name, incorporation of open access initiative into the University's

website, ownership of personal websites and personal connection to the Internet among academics and the limitation of webometric analysis (in this case search engines), impede on the chances of the University ranking top in Africa. On the other hand, the use of the web, research activities, volume of research published within one year of the University's existence, ownership of computers, awareness of web publication and open access initiatives are quite encouraging. In view of the above, it is obvious that the University has displayed strong prospect of future webometric ranking.

It is therefore recommended that the University assess her academic personnel development and composition policy to favour scouting and recruitment of more experienced academics as this will also aid the production of qualitative research that are likely to receive early and voluminous sitation. The current domain name should also be assessed and changed to www.bellsuniversity.edu.ng which is in line with stated convention. Also, academics in the University should be encouraged to carryout more research and to have their own websites which should be used to promote open access initiatives, and as such, help improve the University's web presence.

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