

Webometric Ranking Demystified

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Abstract

The Web has not only become the mainstream choice for information dissemination and exchange but has also become the defacto platform of competition among individuals and organisations. In particular, a University web presence not only enhances its visibility but also provides a strong indication of its academic capability and impact. This makes self or third party assessment of University web presence imperative. However, how this assessment or webometric ranking is done is still a mystery to many. The work is an exposition of how the world webometric ranking of Universities (tertiary institutions) is done and how the Universities can improve on their webometric ranking.

Keywords: Webometrics, Website evaluation, Website quality and University Ranking

1.0 Introduction

The emergence of the internet and advances in information and communication technology (ICT) has led to a general and global acceptance and use of the World Wide Web (Web for short) not only as the mainstream choice for information dissemination and exchange but also as the defacto platform of competition among individuals and organisations [1]. This accounts for the myriads of web sites including personal web sites, advocacy web sites, corporate web sites, social networking sites, blogs, e-commerce sites and portals on the internet today. The quality of these sites which is influenced by a combination of factors including loadtime, usability, quality of information, look and feel, link visibility, rich files and frequency of visitation among others; has become an abstraction or approximation of the service quality or capability of the individuals or organisations that own them.

A little wonder why the quality of Universities globally is being adjudged by their webometric ranking (<http://www.webometrics.info/>). Universities with strong and detailed web presence providing exact descriptions of the structure and activities of the University help increase their perceived impact, improve their visibility and make stakeholders perception about them positive [2]. For improved ranking or competitiveness therefore, it is ordinarily necessary that individual University should regularly evaluate their website quality vis-à-vis those of at least their close rivals to know how well they are faring relatively and how they can improve. However, how this ranking is done remains a mystery to many including academic institutions. This no doubt incapacitates these institutions from carrying out a webometric self-assessment and as such, stands helpless on the issue of improving the quality of their web presence or world webometric ranking.

Although the webometric ranking of University portals is done using the Weightage model [3,4], it is important to note that three basic webometric models exist for evaluating website quality: (i) Linear Weightage model or Weightage model, (ii) Analytical Hierarchical Process model and, (iii) Fuzzy Analytical Hierarchical Process model [5]. While each have their strengths and weaknesses [6], we will only concentrate on the Weightage model since this is the one used by Cybermetrics Laboratory (<http://www.webometrics.info/>), the organisation that does the world webometric ranking of Universities. The weightage model though very simple compared to the other two models is sufficiently powerful. However, expositions on how to use the other two models for webometric ranking of Universities (tertiary institutions) were also done but reported separately in [7] to keep this paper in focus.

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1.1 Concept of Webometrics

Organizational websites have different purposes, designs and implementations that indicate their focus or priority. The value an organization attaches to a website is reflected in the operations and content of the website. The Webometric ranking of the world's tertiary institutions as done by Cybermetrics Laboratory is based on the following four metric indicators: Web Size, Rich Files, Google Scholar (research output) and Web Visibility(<http://www.webometrics.info/>). The field of webometrics also known as the "Ranking of World Universities" is an exercise that rates the quality of web presence of most Universities in the World. The original aim of webometrics was to promote Web publication such as Open Access initiatives, electronic access to scientific publications and other academic materials. However, it has gained recognition for ranking the global performance and academic capability of Universities and other tertiary institutions.

Webometrics, a term first coined in [8], is the study of the quantitative aspects of the construction and use of information resources, structures and technologies on the Web drawing on bibliometric and informetric approaches [9]. Thelwall [10] defined webometrics as "the study of web-based content with primarily quantitative methods for Social Science research goals using techniques that are not specific to one field of study".

This measurement or study can be done using various attributes or features of the Web. The "Web Impact Factor" (WIF) introduced in [11] is an example. The WIF measure may be defined as the number of web pages in a web site receiving links from other web sites, divided by the number of web pages published in the site that are accessible to the crawler. However, due to complications in calculation, WIF is hardly used. Instead, indicators as size of the institution measured by the volume of published materials of institutions/individual on the web and the visibility and impact of the web pages measured by the citation or links they receive are used.

The emergence of webometric ranking of Universities is as a result of the need to measure universities' adoption of the web for research, teaching and learning. It is assumed that universities at the top are those that have integrated the web into their research, teaching and learning culture. These Universities 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. Webometrics uses link analysis for quality evaluation as it is a far more powerful tool than analysis or global surveys [3]. Link includes not only bibliometrics citation but also third party involvement with University activities. If the web performance of an institution is below the expected position according to their academic excellence, University authorities should reconsider their web policy [3].

The Web covers not only formal documentation such as E-journals, repositories but also informal scholarly communications such as PowerPoint slides. It could also reach much larger potential audience, offering access to scientific knowledge to researchers and institutions located in developing countries and also to third parties (economic, industrial, political or cultural stakeholders) in their own community. The web is the adequate platform for the internationalization of the institutions. A strong and detailed web presence providing exact descriptions of the structure and activities of the university can attract new students and scholars worldwide.

Webometric ranking is not only focused on research results or course content [12] but also on other indicators which may reflect the global quality of the scholar and research institutions worldwide [10].

2.0 Materials and Method

This work adopts the four web indicators used by Cybermetrics Laboratory(<http://www.webometrics.info/>). These indicators are further grouped into two parts – Activity which consist of number of pages, number of documents and number of papers, with 50% assigned weight and Impact which consist of the number of external inlink, also with 50% assigned weight; as shown in Figure 2.1 [3]. The web indicators are designed not only to monitor the presence and impact of an individual or an organization in the webspace but to promote a more open, global, societal, and detailed knowledge of the scholars' organization, activities and results [13].

These web indicators as used by Cybermetrics Laboratory are highlighted as follows:

1. **Size:** This has to do with the number of pages usually in HTML or assimilated formats obtained from search engines such as Google, Yahoo, MSN (bing) and Exalead using the syntax –site:domain_name. For example, to obtain the number of pages in University of Benin website, we entered "site: uniben.edu" in Google search engine and had 393,000 (time in seconds) displayed at the top left of the search results. It is important to note that this value remain the same irrespective of the browser type. We repeated this for the four search engines and took the average of each university as the size of the various university website. The choice of these search engines by Cybermetrics Laboratory is traceable to their age.
2. **Rich files:** This is the number of documents in Adobe (.pdf), Word (.doc) and Powerpoint (.ppt) formats. The success of self-archiving and other repositories related initiatives can be roughly represented from rich file and scholarly data. This include pdf, doc, and ppt files. The pdf and doc or docx formats means that administrative reports and bureaucratic forms are involved. Similar procedure as with the size indicator is followed for each of the file type using the syntax – .file_type: domain_name.g. 'pdf: uniben.edu'. The averages from each search engine for the various file type was aggregated to get the size of organisation's Rich files.

3. **Number of Papers:** This is measured by the number of organisation's scholars publication indexed in Google Scholar. Google Scholar (<http://www.scholar.google.com>) is a freely accessible web search engine that indexes the full text of scholarly literature across an array of publishing formats and disciplines. To get the number of papers we entered the domain name of the institution on google scholar and the value at the top of the search result is the required number. For example, we had 544 as at the time of data capture on entering 'uniben.edu' on google scholar engine.
4. **Visibility:** This has to do with the unique external links received (inlinks) by a site and can be confidently obtained from only Yahoo search [14]. This notwithstanding, we also used other search engines as we did with Rich files and size to compute the average inlinks. For example, to obtain the number of inlinks to University of Benin website using Yahoo search, we entered "link: uniben.edu" in Yahoo search and had "16,400 results" displayed at the bottom right of the search results.

Apart from these web indicators, there are other web indicators such as load and response time, look and feel, interactivity, accessibility error etc. [6,12]. It is however easy to appreciate why Cybermetrics Laboratory is stuck with the aforementioned four indicators. They are not dependent on any external factors outside the institutions business of teaching, research and learning unlike others that may be influenced by location, environment, culture, capability of internet service provider (ISP) and even browser type. The four indicators are strictly academic and globalisation oriented.

These web indicators usually serve as input to the webometric models – Weightage model; as described in the following subsection.

2.1 The Weightage Model

This model, also called linear weightage model, is very easy to implement but dependent upon decision maker's judgment as they have to assign weights to the criteria involved in the decision making process. In most cases, some criteria are considered more important than others. These weights play a vital role in decision making process and extremely affect the final decision [4]. In webometrics, weightage model is simply obtained using equation (1).

$$WR = ((\text{size} * 0.2) + (LV * 0.5) + (SC * 0.15) + (RF * 0.15)) \quad (1)$$

Where

- WR is the web rank
- Size is the total number of the page obtained from the institution domain name
- LV is the link visibility (inlink) obtained from other site
- SC is the google scholar which indicate the number of institution's papers, repositories, journals, conference proceedings indexed by google scholar and
- RF is the number of rich files obtained from institution domain name which consist of pdf, doc, and ppt file formats.

To do this exposition, we selected some Universities within our immediate environment. The selected Universities are University of Benin, Ambrose Alli University, Benson Idahosa University and Igbinedion University all in Edo State. The choice of Universities makes the research of immense benefit to our immediate environment. Besides, using too many or even all the Universities in the world for exposition purpose may get the target reader confused.

2.2 Brief History of Edo State and the Four Conventional Universities

Edo State is an inland state in Western Nigeria with its capital in Benin City. Edo State was created in 1991 out of the former Bendel State which lies roughly between longitude 06° 04'E and 06° 43'E and latitude 05°44' N and 07°34' N. It is bounded in the south by Delta State, in the west by Ondo State, in the north by Kogi State and in the east by Kogi and Anambra States. It occupies a land area of about 17,802 square kilometers. From the 2006 census the state has a population of 3,983,534

2.2.1 University of Benin

The University of Benin which was founded in 1970 started as an Institute of Technology and was accorded the status of a full-fledged University by National Universities Commission (NUC) on 1st July, 1971. On 1st April, 1975 the University was taken over by the Federal Government and became a Federal University. Today, the University has continued to grow from strength to strength with a number of Faculties, Departments, Institutes and Units with a total number of students of about 40,000 which comprises of both part-time and full-time students.

The Faculties as presently constituted are those of Agriculture, Arts, Education, Engineering, Law, Life Science, Pharmacy, Physical Sciences, Management Sciences, Social Sciences, and the College of Medical Sciences (which has three Schools: Basic Medical Sciences; Dentistry and Medicine; and the Institute of Child Health). The University offers courses at Postgraduate and Undergraduate level and it is one of the most sorts after university in Nigeria.

University of Benin which started its information and communication technology unit (ICTU) as Management Information System (MIS) in 2004 has grown from strength to strength. Presently University of Benin portals allows student to carry out online payment, online registration, make enquiries and apply for both undergraduate and post graduate programmes online. The institution which occupies the first position in Nigeria in 2012 webometric ranking has been unseated from that position in the 2013 webometric ranking and this is one of the motivations that sparked off this research culminating in this report, in part. The University website domain name as recognized by webometrics is www.uniben.edu (or uniben.edu for short).

2.2.2 Ambrose Alli University

The idea of Ambrose Alli University which was established in 1981 was firmly predicated on the dynamics of the rapid education development through which the whole of Bendel State was undergoing in the late 1970s and early '80s. The University which was established by the then governor of Bendel State (now Edo and Delta States)- Prof. Ambrose Alli, was first known as Bendel State University, then Edo State University and it was later changed to its present name (Ambrose Alli University) in commemoration of Pro. Ambrose Alli. Ambrose Alli University presently comprises of the following faculties; Agriculture, Arts, Basic Medical Sciences, Education, Engineering and Technology, Clinical Science, Law, Social Sciences, Natural Sciences and Environmental Studies. As a result of the emergence and importance of website, Ambrose Alli University has also adopted the use of web portals to disseminate, advertise activities and as well perform student's registration and online payment via the portals, which is being managed by the Information and Communication Technology (ICT) centre of the university. The university website domain name as recognized by webometrics is www.aaukpoma.edu.ng (or aaukpoma.edu.ng for short).

2.2.3 Igbinedion University Okada

Igbinedion University Okada is a private university in Nigeria, located at Okada Wonderland in Okada, a town close to Benin City in Edo state. The university was founded by Sir Gabriel Osawaru Igbinedion.

The University came into existence following the presentation of a certificate of approval on the 16th of May 1999 by the Federal Government, thus Igbinedion University became the first licensed Private University in Nigeria. The foundation students arrived at Okada on Friday 15th October 1999. Presently, the University has the following faculties: Pharmacy, Engineering, Business and Management Sciences, Law, Art & Social Sciences, Natural Sciences & Applied Sciences and Health Sciences. Not to be left out in the train of development, Igbinedion University has also adopted the use of portals like other Universities in the State and the portal is managed also by the ICT department of the institution. The university website domain name as recognized by webometrics is www.iuokada.edu.ng (or iuokada.edu.ng for short).

2.2.4 Benson Idahosa University

In February 2002, ten years after the application to start a private University, the Federal Government, acting through the National Universities Commission (NUC), graciously granted Benson Idahosa University license to operate. The University started operating as a fully licensed institution in March 2002 with an initial student enrolment of 400, registered into two faculties (Faculty of Arts, Social Sciences & Education and Faculty of Basic and Applied Sciences) and was ranked 2nd among private universities offering undergraduate degrees in the country by the NUC in their 2005 national ranking. The University is situated in Benin City, Edo State with the Information and Communication Technology (ICT) centre being the unit in charge of the school portal through which information can be disseminated. It is also used to carry out student registration and online payments. Presently the institution has the following faculties: faculty of Art and Education, Faculty of Agriculture, Faculty of Law, Faculty of Basic & Applied Sciences and Faculty of Social & Management Sciences. The University website domain name as recognized by webometrics is www.biu.edu.ng (or biu.edu.ng for short).

Apart from these University portals and their web site domain names, an HP note book with a Visafone 3G internet modem was used to capture the web indicators' data which was done between the hours of 10.30am and 2.30pm of Saturday, 18th of January, 2014 at the Department of Computer Science, University of Benin, Benin City, Edo State, Nigeria.

3.0 Results and Discussion

Table 3.1a. shows the link visibility or simply visibility of some selected university portals using the same search engines used by Cybermetrics Laboratory. It is important to note that some search engine results were too extreme on a physical inspection of the results. These extreme results usually called noise or dirt, though cannot be avoided usually lead to the number of results returned by such search engines in such cases to be discarded. This is usually the case when notoriously large number of search result is returned compared to other search results. What Cybermetrics Laboratory actually does is to disregard such result for the given portal and search engine. Thus, results in Table 3.1b may be used by Cybermetrics Laboratory instead of Table 3.1a. Note the disappearance of some cell value in Table 3.1b as against Table 3.1a. Also note that

the average is a function of the accepted search results i.e. you do not divide by the number of search engine used but by the number of accepted results for each University. This was done to make the ranking as realistic as possible. This explanation holds for the other web indicator data tables with label 'b' hereafter referred to as the 'b tables'. We however used both tables in this work and had their results compared. There are strong indication that CybermetricsLaboratory make use of only Yahoo search engine for estimating website visibility[14]. This we also did in addition and had results compared.

It should be noted that the Cybermetrics Laboratory usually make use of pdf, doc (which include docx) and ppt file formats which is sufficient to estimate the quantity of scholarly data in an academic institutions web site. Values for each of these files format were captured in Tables3.3 to 3.5 respectively. Their averages were then aggregated (i.e. averaged) and captured in Table3.6. The top row holds the web indicator data with label 'a' hereafter referred to as the 'a tables' while the other holds those of the 'b tables'. It is this result in Table3.6 that was used as the Rich file value of each of the universities.

Table3.7 shows the value returned by Google Scholar search for each of the University domain name. This result is obviously not a true reflection of the various institutions' research output. We observed that only publications with official e-mail addresses count for the institution with the e-mail's domain name. For example, our official e-mail addresses are godspower.ekuobase@uniben.edu and godbless.enaigbe@delsuth.com.ng respectively and they clearly capture our institutions' domain names which Google Scholar uses to get the number of scholarly publications affiliated to our various institutions. Thus, if the e-mail address in a given publication is say 'grace@gmail.com', then that publication will count for the organisation that owns the domain name 'gmail.com' which is Google.

When equation (1) was applied on Tables3.8a and 3.8b, we had the results (ranking) in Table3.9a to Table3.9d respectively. Observe that we have four tables holding four different results. Results in Table3.9a and 3.9b were calculated using equation (1) with data from table 3.8a. In particular, table3.9b used the link visibility value returned by only Yahoo search engine instead. This is the suspected practice of Cybermetric Laboratory [14]. Similarly, results in Table3.9c and 3.9d were calculated using equation (1) with data from Table 3.8b; i.e. spurious values were screened off. Though controversial, this is strongly the practice of Cybermetric Laboratory. Note that it is the ranking produced by the use of only the Yahoo search engine for Web visibility that strongly agrees with the latest Webometric ranking result.

It is important to note that Benson Idahosa University had more spurious indicator values which were discarded. This is obviously working against their webometric ranking and is traceable to the nature of their domain name (biu.edu.ng) which is not meaningful enough and thus capable of introducing noise into indicator values returned by search engines. Name of institutions in the domain name between five to eight characters is preferred. It was observed that the scholar indicator by Google Scholar is very poor, too poor to be true but that is the true result returned by the indexing system. Universities in Nigeria are particularly doing badly here. Its high time Universities in Nigeria made good effort to have and enforce the use of institutional official e-mail address by their staff and students in all official correspondence and publications. This is as important as having their publications abstracts uploaded into the University web sites in either pdf or doc formats; with links to the Journal or publishers' websites. The latter may increase their website Rich File value more but the former will increase the scholarly rating. Publications in closed journals (Print only) should be discouraged so as to increase institution's scholarly webometric rating. We also have our reservation on why only Yahoo search engines should be used in getting website visibility which have 50% weight as against the other web indicator values in which several search engines are used and have their results aggregated. This may likely increase the ranking of some Universities in this part of the world like the case of Ambrose Alli University in Tables3.9c and 3.9d.

4.0 Conclusion

The need for a strong web presence and self or third party assessment of academic institutions web sites by the institutions was stressed. The dearth of knowledge about how the organisation – Cybermetric Laboratory – that does the world webometric ranking carry out the exercise was the essence of this research and we sufficiently exposed this process. It is now evident that webometric exercise is a very simple exercise and there is no magic about the exercise. With this development, the webometric ranking of tertiary institutions in this part of the world will improve particularly when the following recommendations evident from our results are imbibed:

- Official e-mail address should be made available and enforced among staff and students for all official and even un-official correspondence.
- Staff profile, particularly those of academic staff should be created and regularly updated on the university web sites; with the abstracts of their publications carrying their official (institutional) e-mail addresses.
- E-administration and e-business via institutional web sites must be seriously embraced by tertiary institutions in Nigeria.

- Academic content including lecture materials, seminars, talks, symposium should be made available on the institutions web sites in pdf, doc or ppt file formats.
- Electronic correspondence via institutional web sites between staff and students should be encouraged.
- The use of print only journals should be seriously discouraged.
- Academic staff should be encouraged to create and regularly update their profile in Google Scholar
- Regular webometric self and third party assessment as demonstrated in this article is also recommended; this will help expose institutional webometric lapses.

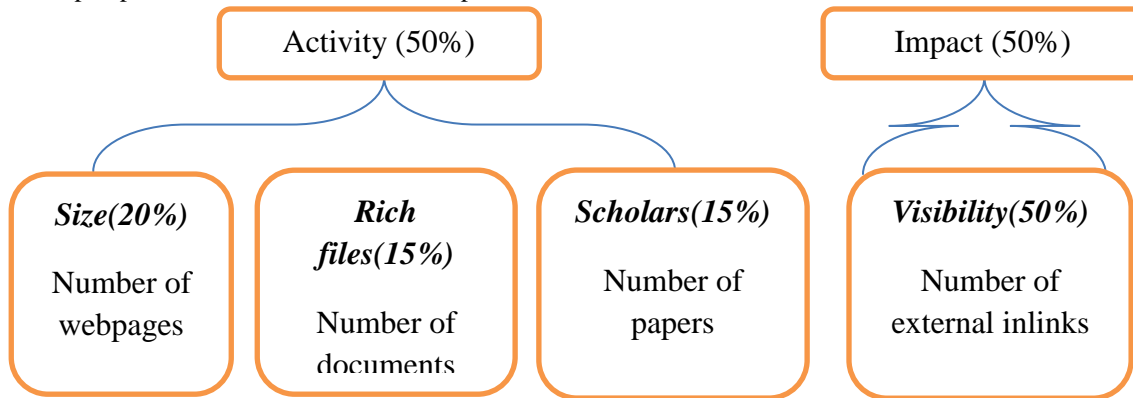


Figure 2.1: Academic model of the Webometric Ranking indicator [3].

Table3.1a: Table showing the Link Visibility of University Portals.

Link Visibilty	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Yahoo Search	16,400	874	78	60
Google	488,000	12,500	23,100	2,210,000
Msn (bing)	14,800	841	75	60
Exalead	527	45	72	58
Total	519,727	14,260	23,325	2,210,178
Average	129931.75	3565	5831.25	552544.5

Table3.1b: Table showing the Link Visibility of University Portals.

Link Visibilty	Uniben	Ekpoma	Igbinedion	Beson Idahosa
Yahoo Search	16,400	874	78	60
Google	-	12,500	23,100	-
Msn (bing)	14,800	841	75	60
Exalead	527	45	72	58
Total	31,727	14,260	23,325	178
Average	10575.66667	3565	5831.25	59.33333333

Similarly, tables3.2aand 3.2b holds the webometric data size of the selected university portals.

Table3.2a: Table showing the Size of University Portals.

SIZE	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Google	393,000	20,700	22,500	10,400,000
Yahoo Search	10,200	1,650	41	61
Msn (bing)	10,500	1,410	40	60
Exalead	75	119	56	82
Total	413,775	23,879	22,637	10,400,203
Average	103443.75	5969.75	5659.25	2600050.75

Table3.2b: Table showing the Size of University Portals.

SIZE	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Google	393,000	20,700	22,500	-
Yahoo Search	10,200	1,650	41	61
Msn (bing)	10,500	1,410	40	60
Exalead	75	119	56	82
Total	413,775	23,879	22,637	203
Average	103443.75	5969.75	5659.25	67.66666667

Table3.3a: Table showing the PDF Content of University Portals.

RICH FILES (PDF)	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Google	1,970	40	100	645,000
Yahoo Search	2,110,000,000	6,860	38	73,300,000
Msn (bing)	14,700	1,100	37	45
Exalead	2,547	277	163	3,031
Total	2,110,019,217	8,277	338	73,948,076
Average	527504804.3	2069.25	84.5	18487019

Table3.3b: Table showing the PDF Content of University Portals.

RICH FILES (PDF)	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Google	1,970	40	100	-
Yahoo Search	-	6,860	38	-
Msn (bing)	14,700	1,100	37	45
Exalead	2,547	277	163	3,031
Total	19,217	8,277	338	3,076
Average	6405.666667	2069.25	84.5	1538

Table3.4a: Table showing the Word Document Content of University Portals.

RICH FILES (DOC)	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Google	224	20	27	553,000
Yahoo Search	17,600	44	21	6,140,000
Msn (bing)	11,000	33	24	16
Exalead	2,477	278	163	3,062
Total	31301	375	235	6696078
Average	7825.25	93.75	58.75	1674019.5

Table3.4b: Table showing the Word Document Content of University Portals.

RICH FILES (DOC)	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Google	224	20	27	-
Yahoo Search	17,600	44	21	-
Msn (bing)	11,000	33	24	16
Exalead	2,477	278	163	3,062
Total	31301	375	235	3078
Average	7825.25	93.75	58.75	1539

Table3.5a: Table showing the Power Point Content of University Portals.

RICH FILES (PPT)	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Google	40	9	41	3,840
Yahoo Search	106,000,000	30	13	1,360,000
Msn (bing)	5,230	63	28	18
Exalead	253	277	163	3,048
Total	106005523	379	245	1366906
Average	26501380.75	94.75	61.25	341726.5

Table3.5b: Table showing the Power Point Content of University Portals

RICH FILES (PPT)	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Google	40	9	41	3,840
Yahoo Search	-	30	13	-
Msn (bing)	5,230	63	28	18
Exalead	253	277	163	3,048
Total	5523	379	245	6906
Average	1841	94.75	61.25	2302

Table3.6: Table showing the Aggregated Rich File Value of University Portals

Rich File Value	Uniben	Ekpoma	Igbinedion	Benson Idahosa
	184671336.8	752.5833333	68.16666667	6834255
	5357.305556	752.5833333	68.16666667	1793

Table3.7: Table showing the Google Scholar Value of University Portals

Number of Papers	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Google scholar search	544	9	6	16

Table3.8a and 3.8b summarises the values of the web indicators as captured and aggregated.

Table3.8a: Table showing the Web Indicator Value of University Portals

Indicators: Institution	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Link Visibility (LV)	129931.75	3565	5831.25	552544.5
Size	103443.75	5969.75	5659.25	2600050.75
Papers (SC)	544	9	6	16
Rich files (RF)	184671336.8	752.5833333	68.16666667	6834255

Table3.8b: Table showing the Web Indicator Value of University Portals

Indicators: Institution	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Link Visibility (LV)	10575.66667	3565	5831.25	59.33333333
Size	103443.75	5969.75	5659.25	67.66666667
Papers (SC)	544	9	6	16
Rich files (RF)	5357.305556	752.5833333	68.16666667	1793

Table3.9a: Table showing the Webometric Value and Ranking of Universities

Institution	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Webometric Value	27786436.74	3090.6875	4058.6	1821423.05
Ranking	1st	4th	3rd	2nd

Table3.9b: Table showing the Webometric Value and Ranking of Universities

Institution	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Webometric Value	27729670.86	1745.1875	1181.975	1545180.8
Ranking	1st	3rd	4th	2nd

Table3.9c: Table showing the Webometric Value and Ranking of Universities

Institution	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Webometric Value	26861.77917	3090.6875	4058.6	314.55
Ranking	1st	3rd	2nd	4th

Table3.9d: Table showing the Webometric Value and Ranking of Universities

Institution	Uniben	Ekpoma	Igbinedion	Benson Idahosa
Webometric Value	29773.94583	1745.1875	1181.975	314.8833333
Ranking	1st	2nd	3rd	4th

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