

Developing Objective Ranking System for Tertiary Institutions in Developing Nations

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"ABSTRACT

University ranking has become increasingly important in recent years because it creates a platform for competition amongst universities and also serves as a marketing tool in communicating performances of universities which could help them to build international reputation. Also, ranking could serve as a guide for prospective students seeking admission into tertiary institutions. There are many ranking systems used by developed nations but some of the parameters employed by these internationally accepted ranking systems, such as economy activity and employers rating of universities, are not easily available in the developing world, and some parameters that are important in developing nations such as number of programmes with full accreditation, proportion of academic staff at professorial cadre and students' completion rate are not included in the global rating. Hence, an objective ranking system that will capture the parameters relevant to the universities in developing nation is desirable. Here, we propose an objective ranking system that will capture the peculiarities of the universities in developing nations. Ten existing ranking systems were considered in this study and seventeen criteria were identified from them and used to propose a new ranking system. Some of the criteria used are number of full professors in the university, h-index of the university and the total number of students in the university. Weights were objectively assigned for each criterion based on their degree of importance and the number of ranking systems using the criteria that were used in developing the proposed system. The proposed system was implemented using Nigerian Universities and web crawling techniques were developed and employed to extract the values of the criteria for each of the universities used as a case study. A total score based on the weight of criteria was calculated for each university and used for ranking. System implementation was carried out using PHP and Python. The best five universities from the proposed ranking system were University of Ibadan, Obafemi Awolowo University, University of Lagos, University of Benin and University of Ilorin. The proposed ranking system will give a better results in ranking of universities in developing nation than the existing systems because it contain more objective and useful criteria that will captured the peculiarities of universities in developing nation.

Keywords – University Ranking, university, higher institutions, developing nations, Nigerian universities

Introduction: A University is the highest citadel of learning which has the primary goals of awarding degrees, conducting research and rendering community services. The existence of Universities can be traced to 859 AD when the first University in the world was founded, that is the University of Karueein in Fez [1]. Since then, most countries of the world have been establishing Universities and the number is still increasing. The importance of education and its strong and positive correlation with the global and national economy growth can explain the increase in number of universities witnessed in all nations of the world. Another factor that could contribute to the increase in the number of universities is the global increase in population. This increase in the number of universities has also introduced differences in the standard and quality of universities. Most nations of the world have both governmental and non-governmental agencies that ensure and moderate quality of educational sectors, of which university is one –[2]. Albeit, there is a well-

known competition between universities in the area of which one is better than the other. One approach to this competition is ranking, which makes it possible to compare many universities based on certain criteria [3-5]. The advent of computer and advancement of information technology have been major vehicles in the ranking of universities because many of the information needed for ranking are now available online.

Universities ranking has become increasingly important in recent years especially among universities dons because it creates a platform for competition among the universities and also serves as an advertising tool in publicizing their academic performance [5]. Ranking could also serve as a guide for prospective students and also helps a university to identify her area of weaknesses and make efforts towards solving them [6]. Ranking can help funders and stakeholders to identify where to put their funds towards improving university education, research and innovations [4].

The emergence of ranking systems can be traced back to 1865 when a study examined scholars and quality of higher institutions in Europe [7]. Since that time, there have been a lot of global efforts at classification and ranking of universities and colleges. One of the earliest of these was the effort of the Carnegie Foundation at classification of higher institutions using 5 criteria, namely, the award of doctorate degree, award of master's degrees, award of bachelor degrees, associate colleges and special focus institutions [8]. The first well published ranking was the ranking of the Universities and colleges in the USA by the USA magazine called the US News and World Report in 1983 and their ranking was based on the classification by the Carnegie Foundation [8, 9]. Consequently, the ranking of universities today can therefore be traced to the pioneering efforts of the Carnegie Foundation. Another effort on university ranking that is worth mentioning is that of the British. In 1993, a London newspaper called the Financial Times published a league table which was used to rank tertiary institutions in the United Kingdom 'for the primary purpose of helping potential applicants that were seeking admission to study the right course and choose the appropriate institutions [9]. Since that time, there has been a proliferation of ranking systems, both at national and global levels [10].

Currently, there are many global ranking systems; some of the common ones are the Academic Ranking of World Universities (ARWU), Webometric Ranking of World Universities (WRWU), Quacquarelli Symonds World University Ranking, formally known as Times Higher Education QS World University Ranking (QS), Leiden Ranking and Performance Ranking of Scientific Papers for Research Universities (HEEACT) [11-13].

University ranking systems differ based on criteria used, performance indicators and weights assigned to each criterion [14]. In 2006, at the International Ranking Expert Group's meeting, a guideline for university ranking known as the 'Berlin Principles' was developed to serve as a guide for researchers in ranking [12, 15]. The guideline contains information on clarity of purpose, criteria weighting, data collection and result presentation.

Most of the global ranking systems were designed for developed nations and hence made an assumption that the information such as economic activities [10] and employers rating are easily available online or through an easy direct contact. Unfortunately, many universities in the developing countries are not visible online [16]. Even where some universities have websites, such websites do not have most of the information required by the global ranking systems [4]. Also, poor research funding, low income and poor facilities are some of the characteristics of the universities in the developing countries [17, 18]. Additionally, many universities in the developing nations do not have a good record keeping system or policy on data access. These problems make it very difficult to rank the universities in the developing nations using the criteria established for developed nations [4]. The aim of this research was hence, to develop an objective ranking system that will account for the peculiarities of developing nations.

Materials and Methods

Selection of Criteria for University Ranking

We carried out a thorough literature search and identified 10 existing ranking systems [7, 11-13, 19, 20] namely; 1. Academic Ranking of World Universities (ARWU), 2. The Webometric Ranking of World Universities (WRWU), 3. Quacquarelli Symonds World University Ranking, formally known as Times Higher Education QS World University Ranking (QS), 4. Performance Ranking of Scientific Papers for Research Universities (HEEACT), 5. Leiden (CWTS), 6. SCImago Institutional Rankings (SCIMAGO), 7. Global University Rankings (GUR), 8. Rating of Educational Resources, Russia (RATER), 9. World University Ranking (Times Higher Education/Thomson Reuters (THE-TR) and 10. The National Universities Commission Ranking System (NUC). RATER and THE-TR used the same set of criteria and they were hence treated as identical and represented as THE-TR. Twenty-two distinct criteria were identified from these systems (Table 1) and grouped to identify the commonalities between the ranking systems (Table 2, Figure 1).

Table 2 shows that criteria 4 (number of publications) was the most commonly used criteria and used by eight ranking systems whereas 9 criteria (1, 13, 14, 15, 16, 19, 20, 21 and 22) were the least used as they were used by only few ranking systems. All criteria used by at least two ranking systems were considered important and hence selected for inclusion in the current study. Criteria 8, 14, 16 and 20 were excluded because the information is not easily available in most Universities in the developing countries. Criteria 13 (no of highly cited papers) were also not included because the information from it is already available from criteria 4 (no of publications) and 12 (H-index). Out of the ten existing systems, only the ranking from developing nation i.e. NUC used criteria 19 (Academic programmes with full accreditation status), 21 (student completion rate) and 22 (Academic staff at professorial cadre). These three criteria were included in the proposed system because of the importance of accreditation, student completion ratio and the number of senior academic staff in the University. A total of 17 criteria were finally selected (see Table 1, those without asterisk). In summary, the criteria selected for the proposed system are number of Nobel prizes by Alumni, number of Nobel prizes by faculty, No of times faculty were cited, Number of Publications, Visibility of the university on the web, Size of the university website, No of Multi-Dimensional Files, Faculty/Student ratio, International Faculty, International Students, H-Index, Patents, PhDs Awarded, University Popularity, Academic programmes with full accreditation status, Student completion rate and Academic staff of the university at professorial level.

Table 1: Criteria used by the existing University Ranking Systems

S/N	Criteria	S/N	Criteria
1	Nobel prize by Alumni	12	H-Index
2	Nobel prize by faculty	13*	No of highly cited papers
3	No of times faculty were cited	14*	International Collaborations
4	Number of Publications	15	Patents
5	Visibility of the university on the web	16*	Economic activity/Innovation
6	Size of the university website	17	PhDs Awarded
7	No of Multi-Dimensional Files	18	University Popularity
8*	Employer Review	19	Academic programmes with full accreditation status
9	Faculty/Student ratio	20*	Stability of the university calendar
10	International Faculty	21	Student completion rate
11	International Students	22	Academic staff of the university at professorial level

*Denotes the criteria not used in the proposed system in the current study

Table 2: Existing Ranking Systems and their Criteria

Criteria \ S/NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. ARWU	1	1	1	1				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2. WRWU				1	1	1	1															0
3. QS			0	1				1	1	1	1											0
	0	0			0	0	0					0	0	0	0	0	0	0	0	0	0	

the last in the rank.

$$S = \sum W_i Y_i \dots\dots\dots \text{Equation 2}$$

$$F = \frac{\sum S_i}{\sum S_{iki}} \times 100 \% \dots\dots\dots \text{Equation 3}$$

Where S is the score for each university, Y_i value of each criterion, W_i is the weight of each criterion and F is the score S expressed in %.

System Implementation

The proposed ranking system was implemented for 166 universities in Nigeria using PHP (web application) and Python (web crawling and parsing). The web crawler acts as an automated script which systematically traverses the internet pages. The crawler extracts relevant information from the web in a methodical and automated manner to support the well-crafted search engine queries. For each University website, a crawler flow was generated using sitemap. The crawler was configured to scrape the web regularly to keep the ranking up to date. Scheduling was carefully designed to reflect the possible time of update. This is crucial because some data items such as number of Professors and h-index are updated on a daily basis while others such as number of students admitted and number of graduates are usually changed on a yearly basis. Figure 2 shows the flow of the web-scraping technology used in the proposed ranking system.

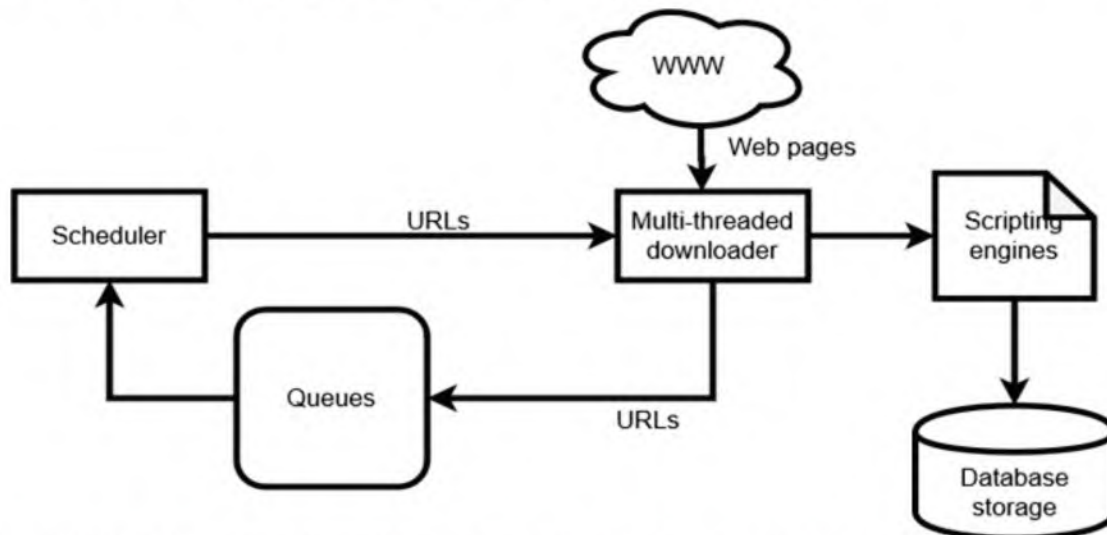


Figure 2: Workflow of developed University ranking web-scraping technology

The web crawler was used to extract the values of criteria that are available on the universities website (e.g. number of publication, visibility of the university on the web, size of the university website and number of multi-dimensional files). The other criteria that could not be automatically extracted by crawling due to unavailability of data or non-uniform web schema on the universities' websites were sourced from the National Universities Commission (NUC) official website (<http://www.nuc.edu.ng>) and inputted manually into the proposed ranking system. MSSQL was used for storing the data, a powerful server of minimum of 16GB RAM was used for a good crawling performance and a set of programming tools (JavaScript, Python and XPath libraries) were employed for scripting tasks.

Results and Discussion

Results

Table 1 show the 17 criteria used in developing the proposed ranking system while Table 4 shows the assigned weights (%) for each of the 17 criteria. Table 6 shows the result of the ranking as at 2nd May 2020. Table 4 shows that criteria 2 (no of Nobel prizes by faculty), 3 (number of times faculty were cited), 4 (number of academic publication), 9 (faculty/student ratio), 12 (H-index), and 15 (patents) were assigned the highest weight of 10%. These were followed by criteria 1 (no of nobel prizes by Alumni), 5 (university visibility), 6 (size of the university website) and 7 (number of multi-dimensional files) which were assigned 5% while criteria 19 (academic programmes with full accreditation) and 21 (student completion rate) were assigned the least weight of 2%. Note that each criterion is assigned weight based on their degree of importance and number of existing ranking systems using the criteria and Table 5 show the description and grouping of the proposed ranking system.

Our results showed that the best 5 Universities in Nigeria are University of Ibadan, Obafemi Awolowo University, University of Lagos, University of Benin, University of Ilorin and the least 5 universities are Alex Ekwueme Federal University Ndufu Alike, Western Delta University, Caleb University, Clifford University and Bayelsa Medical University.

Discussion

Here we propose an objective ranking system that combines the criteria used in the developed nations and those in the developing nations. The existing ranking systems are either focused on the developed nations e.g. Times New Higher [19] or has limited criteria like the NUC [13]. The proposed system used objectively and empirically selected criteria. The best University in Nigeria as reported by the proposed system is the University of Ibadan. This agrees with the general believe of most Nigerians because the University of Ibadan is the first University in Nigeria and it is well known to be a topmost University in Nigeria in the area of teaching and research outputs. Our results show that Obafemi Awolowo University, University of Lagos, University of Benin and University of Ilorin are the 2nd, 3rd, 4th and 5th on the list. This also agrees with the believed of the general public on these universities. They are known for good service delivery and the dream of many prospective students. The least University according to the ranking of our system is Bayelsa Medical University. The University is very young and focuses on Medical science only. That could explain why the research output may be low and subsequently low ranking.

There are 3 ranking systems that ranked most of the Universities in Nigeria, they are NUC [13], QS [19] and the WRWU [7]. We could not compare our system with NUC because it has not released any ranking output for the past 19 years. In view of this, we compared the ranking from our system with WRWU (Webometric) and QS (Times New Higher) as show in Table 3. Our system agrees very well with both WRWU and QS because the best 10 universities from our system has 70% agreement with the best 10 Universities from WRWU, 7 of the best from WRWU are within the best 10 in our system while the best 4 Universities from our system has almost 70% agreement with the best 6 Universities from QS, 4 of the best from QS are also within the best 6 in our system . Our system can be trusted to performed and give better results than WRWU and QS because WRWU used only 4 criteria while QS also used 5 criteria whereas our system used 17 objective criteria which can captured the true ranking of universities in the developing nations.

The major strength of the proposed ranking system is the use of objective criteria which can easily be obtained from many Universities in developing countries either electronically or manually. The proposed system will performed better than WRWU and QS because we included some useful criteria not used by WRWU and QS, for example number of Nobel prizes won by alumni, the

number of times faculties were cited, PhDs Awarded, H-Index and patents. The major limitation of the proposed ranking system is that it was implemented for Nigerian Universities. Future work will consider including all Universities in the developing countries.

Conclusion

An objective ranking system dedicated for developing nations was proposed. The system is reliable and easy to implement. We implemented the proposed system for all Universities in Nigeria and the proposed ranking system will give a better results in ranking of universities in developing nation than the existing systems because it contain more objective and useful criteria that can captured the peculiarities of universities in developing nation.

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Authors Contributions

AGB conducted literature review, performed all experiments and wrote the first draft of the paper. BSA conceived and designed the study, supervised the entire work and wrote the final draft of the paper. OOA was involved in data collection and software development. All authors read and approved the final draft of the manuscript.

Table 3: Comparing of Ranked Universities in Nigeria by the Three Ranking Systems as of the year 2020

S/N	Proposed Ranking System (May, 2020)	Webometric Ranking WRWU (July, 2020)	Times New Higher QS (November, 2020)
1	University of Ibadan	University of Ibadan	University of Ibadan
2	Obafemi Awolowo University, Ile-Ife	Covenant University Ota	Lagos State University, Ojo
3	University of Lagos, Akoka	University of Nigeria, Nsukka	University of Lagos, Akoka
4	University of Benin	Obafemi Awolowo University, Ile-Ife	Covenant University Ota
5	University of Ilorin	University of Lagos, Akoka	University of Nigeria, Nsukka
6	Covenant University Ota	Ahmadu Bello University, Zaria	Obafemi Awolowo University, Ile-Ife
7	University of Nigeria, Nsukka	University of Port Harcourt	

Note that only six universities in Nigeria under the QS (Times New Higher) make it to their league table. Table 3 shows the best universities in Nigeria from the three ranking systems for the year 2020 and it is observed that University of Ibadan maintained the 1st position, University of Lagos,

8	Ahmadu Bello University, Zaria	Federal University of Technology, Akure	
9	Afe Babalola University, Ado-Ekiti - Ekiti State	University of Benin	
10	Usmanu Danfodiyo University, Sokoto	Adekunle Ajasin University, Akungba	

Obafemi Awolowo University, Covenant University and University of Nigeria are among the best 5 topmost universities in area of teaching and research output.

Table 4: Weight (%) Assigned to the Criteria Selected for the Proposed Ranking System

Criteria Number	No of Ranking Systems using the criteria	Assigned Weight (%)
4	8	10%
3	4	10%
2	4	10%
9	3	10%
12	2	10%
15	1	10%
6	3	5%
5	2	5%
7	2	5%
1	1	5%
22	1	4%
10	4	3%
11	4	3%
18	3	3%
17	2	3%
19	1	2%
21	1	2%
	TOTAL	100%

Note that Criteria 4, 3, 2, 9, 12 and 15 were assigned the highest weight of 10% based on their degree of importance and the number of ranking systems using the criteria; Criteria 6, 5, 7 and 1 were also assigned the weight of 5%; Criteria 22 is assigned the weight of 4%; Criteria 10, 11, 18 and 17 were also assigned the weight of 3% while Criteria 19 and 21 are assigned the least weight of 2% because of their importance in knowing the number of accredited programmes in the university and also the rate at which students will completed their studies on time.

Table 5: Description and grouping of the Proposed Ranking System

Criteria	Criteria Description	Weight (%)
(1) Number of Publications	The total number of research publication by staff of the university over a certain period of years	10%
(2) Number of times faculty were cited	No of times a university staff research output were cited (citation).	10%
(3) Noble prize by faculty	No of Staff of the university that has won a Nobel Prize Medals.	10%
(4) Faculty/Student ratio	Its measure the ratio of the number of lecturers divided by the number of students in the university.	10%
(5) H-Index of the University	It is calculated by counting the largest numbers (h) of publications by staff of the university for articles that had been cited at least many times each over a certain (n) period of years.	10%
(6) Patents	No of patent applications by the university that is indexed in Google Scholar and its obtained from https://patentscope.wipo.int	10%
(7) Size of the university website	The number of university web pages that is recovered from Google.	5%
(8) Visibility of the University on the Web	The number of unique external links received by the university website which can be obtained from Google.	5%
(9) Number of Multi-Dimensional Files	The number of different files type documents such as Adobe (.pdf), Adobe PostScript (.ps), Microsoft Word (.doc) and Microsoft PowerPoint (.ppt) that are associated with each university. The result for each file types is extracted from Google, log -normalized and merge together in order to generate the rank.	5%
(10) Noble prize by Alumni	The number of Alumni of the university that have won a Nobel Prize Medals.	5%
(11) Proportion of the academic staff of the university at professorial level	No of full professors in the university	4%
(12) International Faculty	No of foreign members of the university	3%
(13) International Students	No of Foreign students in the university	3%
(14) PhDs Awarded	The total number of PhDs that is awarded by the university per academic year.	3%
(15) University Population	The total number of students in the university	3%
(16) Academic programmes of the university with full accreditation status	No of academic programmes of the university with full accreditation status.	2%
(17) Student completion rate	The total number of students in the graduating class in a year minus the number of students who have completed their record on time.	2%
	TOTAL	100%

Table 6: Ranking of Nigeria Universities using the Proposed Ranking System

S/N	Name of Nigeria Universities	Score (%)	Position
1	University of Ibadan	3.19×10^1	1 st
2	Obafemi Awolowo University, Ile -Ife	3.16×10^1	2 nd
3	University of Lagos, Akoka	1.86×10^1	3 rd
4	University of Benin	5.68×10^0	4 th
5	University of Ilorin	4.40×10^0	5 th
6	Covenant University Ota	2.82×10^0	6 th
7	University of Nigeria, Nsukka	1.44×10^0	7 th
8	Ahmadu Bello University, Zaria	---	8 th
9	Afe Babalola University, Ado-Ekiti - Ekiti State	3.03×10^{-1}	9 th
10	Usmanu Danfodiyo University, Sokoto	2.97×10^{-1}	10 th
11	Lagos State University, Ojo	2.11×10^{-1}	11 th
12	Bayero University, Kano	1.99×10^{-1}	12 th
13	Ladoke Akintola University of Technology	1.89×10^{-1}	13 th
14	Nnamdi Azikiwe University, Awka	1.24×10^{-1}	14 th
15	Ekiti State University	1.22×10^{-1}	15 th
16	University of Calabar	1.19×10^{-1}	16 th
17	Tai Solarin University of Education Ijebu Ode	1.01×10^{-1}	17 th
18	Federal University of Agriculture, Abeokuta	9.13×10^{-2}	18 th
19	Federal University of Technology, Owerri	8.80×10^{-2}	19 th
20	Federal University, Lafia, Nasarawa State	8.76×10^{-2}	20 th
21	Augustine University	8.76×10^{-2}	21 st
22	Sule Lamido University, Kafin Hausa, Jigawa	8.34×10^{-2}	22 nd
23	Summit University	7.25×10^{-2}	23 rd
24	Novena University, Ogume	7.12×10^{-2}	24 th
25	Ambrose Alli University, Ekpoma	7.08×10^{-2}	25 th
26	Bingham University, New Karu	6.58×10^{-2}	26 th
27	Enugu State University of Science and Technology	6.10×10^{-2}	27 th

28	Ondo State University of Medical Sciences	5.32×10^{-2}	28 th
29	Federal University of Technology, Akure	5.23×10^{-2}	29 th
30	Kola Daisi University Ibadan, Oyo State	4.82×10^{-2}	30 th
31	Kogi State University Anyigba	4.78×10^{-2}	31 st
32	Olabisi Onabanjo University, Ago Iwoye	4.11×10^{-2}	32 nd
33	Al-Qalam University, Katsina	3.74×10^{-2}	33 rd
34	Kwara State University, Ilorin	3.65×10^{-2}	34 th
35	University of Uyo, Uyo	3.32×10^{-2}	35 th
36	Federal University of Petroleum Resources, Effurun	2.84×10^{-2}	36 th
37	University of Africa Toru Orua, Bayelsa State	2.69×10^{-2}	37 th
38	Federal University, Oye-Ekiti, Ekiti State	2.40×10^{-2}	38 th
39	Umar Musa Yar'Adua University Katsina	2.14×10^{-2}	39 th
40	African University of Science & Technology, Abuja	2.07×10^{-2}	40 th
41	PAMO University of Medical Sciences, Port Harcourt	2.06×10^{-2}	41 st
42	Nasarawa State University Keffi	2.01×10^{-2}	42 nd
43	Adekunle Ajasin University, Akungba	1.97×10^{-2}	43 rd
44	Southwestern University, Oku Owa	1.96×10^{-2}	44 th
45	Federal University, Dutsin-Ma, Katsina	1.62×10^{-2}	45 th
46	Tansian University, Umunya	1.39×10^{-2}	46 th
47	Ebonyi State University, Abakaliki	1.32×10^{-2}	47 th
48	Kano University of Science & Technology, Wudil	1.24×10^{-2}	48 th
49	Mountain Top University	1.19×10^{-2}	49 th
50	Federal University, Gusau Zamfara	1.14×10^{-2}	50 th
51	Air Force Institute of Technology, Kaduna	1.13×10^{-2}	51 st
52	Sokoto State University	1.08×10^{-2}	52 nd
53	Federal University of Technology, Minna	1.06×10^{-2}	53 rd
54	Bauchi State University, Gadau	9.39×10^{-3}	54 th
55	Edwin Clark University, Kaigbodo	8.84×10^{-3}	55 th
56	River State University	7.92×10^{-3}	56 th
57	Michael Okpara University of Agricultural Umudike	6.12×10^{-3}	57 th
58	Kings University, Ode Omu	6.08×10^{-3}	58 th
59	Bells University of Technology, Otta	5.99×10^{-3}	59 th
60	Federal University, Kashere, Gombe State	5.61×10^{-3}	60 th
61	Federal University, BirninKebbi	5.15×10^{-3}	61 st

76	Crescent University	3.48×10^{-3}	76 th
77	Abia State University, Uturu	3.31×10^{-3}	77 th
78	Nile University of Nigeria, Abuja	3.23×10^{-3}	78 th
79	Adeleke University, Ede	3.16×10^{-3}	79 th
80	Greenfield University, Kaduna	2.95×10^{-3}	80 th
81	Mcperson University, SerikiSotayo, Ajebo	2.88×10^{-3}	81 st
82	Evangel University, Akaeze	2.79×10^{-3}	82 nd
83	Imo State University, Owerri	2.63×10^{-3}	83 rd
84	Igbinedion University Okada	2.49×10^{-3}	84 th
85	Spiritan University, NneochiAbia State	2.06×10^{-3}	85 th
86	Federal University Gashua, Yobe	2.06×10^{-3}	86 th
87	Federal University, Dutse, Jigawa State	1.97×10^{-3}	87 th
88	Hallmark University, Ijebi Itele, Ogun	1.95×10^{-3}	88 th
89	Crown Hill University Eiyenkorin, Kwara State	1.95×10^{-3}	89 th
90	Dominican University Ibadan Oyo State	1.84×10^{-3}	90 th
91	Arthur Javis University Akpoyubo Cross river State	1.79×10^{-3}	91 st
92	Bornu State University, Maiduguri	1.73×10^{-3}	92 nd
93	American University of Nigeria, Yola	1.42×10^{-3}	93 rd
94	University of Agriculture, Makurdi	1.40×10^{-3}	94 th
95	Eastern Palm University Ogboko, Imo State	1.36×10^{-3}	95 th
96	Godfrey Okoye University, Ugwuomu-Nike - Enugu State	1.33×10^{-3}	96 th
97	Ajayi Crowther University, Ibadan	1.30×10^{-3}	97 th
98	Samuel Adegboyega University, Ogwa.	1.27×10^{-3}	98 th
99	Baze University	1.03×10^{-3}	99 th
100	Ignatius Ajuru University of Education, Rumuolumeni	1.01×10^{-3}	100 th
101	Fountain Unveristy, Oshogbo	9.26×10^{-4}	101 st
102	Chukwuemeka Odumegwu Ojukwu University, Uli	9.18×10^{-4}	102 nd
103	Oduduwa University, Ipetumodu - Osun State	9.09×10^{-4}	103 rd
104	Pan-Atlantic University, Lagos	8.89×10^{-4}	104 th
105	Benue State University, Makurdi	8.72×10^{-4}	105 th
106	Federal University, Otuoke, Bayelsa	8.30×10^{-4}	106 th
107	Ibrahim Badamasi Babangida University, Lapai	8.21×10^{-4}	107 th
108	Gregory University, Uturu	8.00×10^{-4}	108 th
109	University of Abuja, Gwagwalada	7.68×10^{-4}	109 th

110	Eko University of Medical and Health Sciences Ijanikin	7.42×10^{-4}	110 th
111	Gombe State Univeristy, Gombe	7.29×10^{-4}	111 st
112	Gombe State University of Science and Technology	6.91×10^{-4}	112 th
113	Plateau State University Bokkos	6.62×10^{-4}	113 th
114	Delta State University Abraka	6.58×10^{-4}	114 th
115	Redeemers University, Ede	6.37×10^{-4}	115 th
116	Chrisland University	6.29×10^{-4}	116 th
117	Anchor University Ayobo Lagos State	6.25×10^{-4}	117 th
118	National Open University of Nigeria, Lagos	5.79×10^{-4}	118 th
119	Niger Delta University Yenagoa	5.07×10^{-4}	119 th
120	Babcock University, Ilishan-Remo	4.92×10^{-4}	120 th
121	Salem University, Lokoja	4.82×10^{-4}	121 st
122	Adamawa State University Mubi	4.49×10^{-4}	122 nd
123	Edo University Iyamo	4.48×10^{-4}	123 rd
124	Al-Hikmah University, Ilorin	3.69×10^{-4}	124 th
125	Taraba State University, Jalingo	3.27×10^{-4}	125 th
126	Caritas University, Enugu	3.23×10^{-4}	126 th
127	Nigerian Defence Academy, Kaduna	2.89×10^{-4}	127 th
128	Kaduna State University, Kaduna	2.72×10^{-4}	128 th
129	Achievers University, Owo	2.60×10^{-4}	129 th
130	Cross River State University of Technology, Calabar	2.47×10^{-4}	130 th
131	Precious Cornerstone University, Oyo	2.43×10^{-4}	131 st
132	Crawford University Igbesa	2.43×10^{-4}	132 nd
133	Modibbo Adama University of Technology, Yola	2.43×10^{-4}	133 rd
134	Oyo State Technical University Ibadan	2.18×10^{-4}	134 th
135	Federal University, Wukari, Taraba State	1.80×10^{-4}	135 th
136	Bowen University, Iwo	1.72×10^{-4}	136 th
137	Kebbi State University of Science and Technology, Aliero	1.63×10^{-4}	137 th
138	Benson Idahosa University, Benin City	1.51×10^{-4}	138 th
139	Federal University, Lokoja, Kogi State	1.38×10^{-4}	139 th
140	Renaissance University, Enugu	1.26×10^{-4}	140 th
141	Skyline University, Kano	1.14×10^{-4}	141 st
142	Ritman University, IkotEkpene, AkwaIbom	7.92×10^{-5}	142 nd
143	Nigerian Maritime University Okerenkoko, Delta State	6.40×10^{-5}	143 rd

144	Rhema University, Obeama-Asa - Rivers State	4.53×10^{-5}	144 th
145	Micheal & Cecilia Ibru University	4.23×10^{-5}	145 th
146	Trinity University Ogun State	4.14×10^{-5}	146 th
147	Elizade University, Ilara-Mokin	4.12×10^{-5}	147 th
148	Moshood Abiola University of Science and Technology	3.36×10^{-5}	148 th
149	Kwararafa University, Wukari	3.35×10^{-5}	149 th
150	Nigerian Army University Biu	2.52×10^{-5}	150 th
151	Nigeria Police Academy Wudil	1.65×10^{-5}	151 st
152	Yobe State University, Damaturu	9.66×10^{-6}	152 nd
153	University of Medical Sciences, Ondo City	7.81×10^{-6}	153 rd
154	Coal City University Enugu State	5.75×10^{-6}	154 th
155	University of Jos, Jos	4.50×10^{-6}	155 th
156	Yusuf Maitama Sule University, Kano	4.47×10^{-6}	156 th
157	University of Maiduguri	3.62×10^{-6}	157 th
158	Veritas University	1.31×10^{-6}	158 th
159	Wesley University, Ondo	1.23×10^{-6}	159 th
160	Wellspring University, Evbuobanosa	8.41×10^{-7}	160 th
161	University of Mkar, Mkar	5.82×10^{-7}	161 st
162	Alex Ekwueme Federal University Ndufu Alike	5.02×10^{-7}	162 nd
163	Western Delta University, Ogahara, Delta State	4.71×10^{-7}	163 rd
164	Caleb University, Lagos	2.29×10^{-8}	164 th
165	Clifford University Owerinta Abia State	1.90×10^{-8}	165 th

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