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ORIGINAL RESEARCH

Development of Objective Ranking System for Tertiary Institutions in Developing Nations

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Abstract:

Introduction: 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 are not easily available in the developing world. Additionally, some parameters that are important in developing 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.

Aim: Here, we propose an objective ranking system that will capture the peculiarities of the universities in developing nations.

Materials and Methods: Seventeen criteria relevant to developing nations were used to propose a new ranking system. Web crawling algorithm was used 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.

Results: 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.

Conclusion: The proposed ranking system will give an objective, better and more reliable ranking result for universities in developing nations than other existing ranking systems because it contains realistic and objective parameters available in developing nations.

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

All co-authors agreed to have their names listed as authors.

1. 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 amongst the universities in the world today especially in 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 five criteria, namely, the award of doctorate degree, award of masters' 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), Webometeric 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.

2. MATERIAL AND METHODS

2.1 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 (Number of highly cited papers) were also not included because the information from it is already available from criteria 4 (Number 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, Number 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*	Number of highly cited papers
3	Number 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	Number 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	0	0	0
2. WRWU	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. QS	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
4. HEEACT	0	0	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
5. Leiden	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6. SCIMAGO	0	0	0	1	1	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
7. GUR	0	1	1	1	0	1	0	0	1	1	1	1	0	0	0	0	0	1	0	0	0	0
8. THE/THR	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0
9. NUC	0	1	0	1	0	0	0	0	1	1	1	0	0	0	0	0	1	1	1	1	1	1
Total	1	3	4	8	2	3	2	1	3	4	4	2	1	1	1	1	2	3	1	1	1	1

Note that 1represents that the criterion is used in the corresponding ranking system and 0 represents not used.

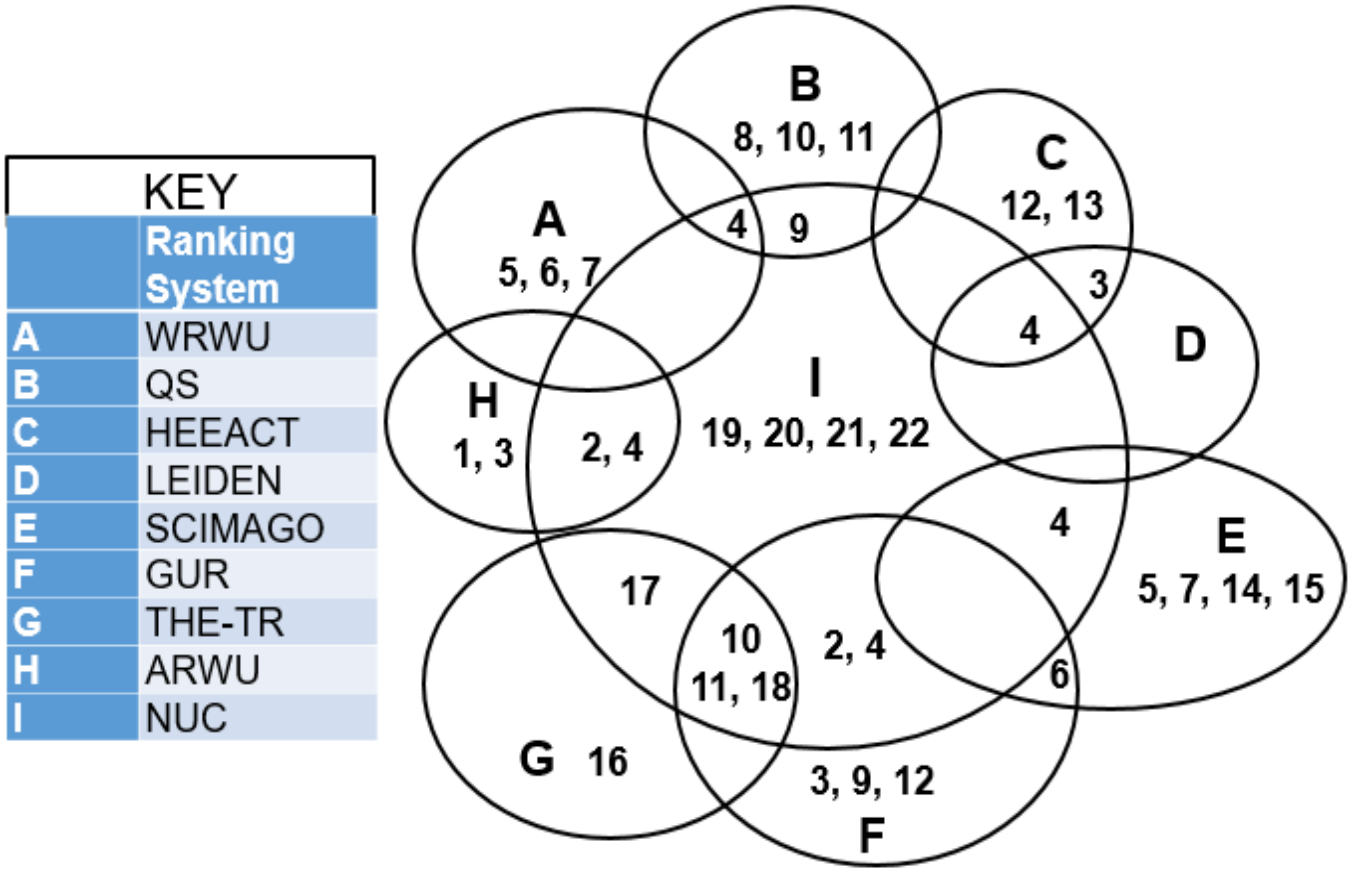

Figure 1: A Venn diagram showing the existing systems with their criteria

2.2 Determination of Weights for the Criteria

All the existing ranking systems do ranking by scoring each university based on some defined criteria and then attach weights to each of the criteria before summing up the scores. In view of this, a significant step in ranking is the determination of the weights to be assigned to each of the criteria. In this study, we empirically computed the weight of each criterion by using equation 1

$$W = \frac{\sum xi}{N} \quad \text{..... Equation 1}$$

Where W is the weight computed and used in this study, x_i is the weight assigned by the existing systems for each criterion and N is the number of existing systems, i is from 1 to N. Where no weight was given by the original ranking system, we assigned weights based on the importance of the criteria as it relates to the developing nations.

The final score for each university was computed using equation 2 and converted to % using equation 3. Then the % scores of all the universities were combined and ranked whereby the university with the highest score becomes the first and the university with the least score becomes the last in the rank.

$$S = \sum WiYi \quad \text{.....Equation 2}$$

$$F = \frac{\sum Si}{\sum Siki} X\ 100\ \% \quad \text{.... Equation 3}$$

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 %.

2.3 SYSTEM IMPLEMENTATION

The proposed ranking system was implemented for 166 universities out of 171 universities in Nigeria because 5 universities do not have online presence. The proposed ranking system was then implemented 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.

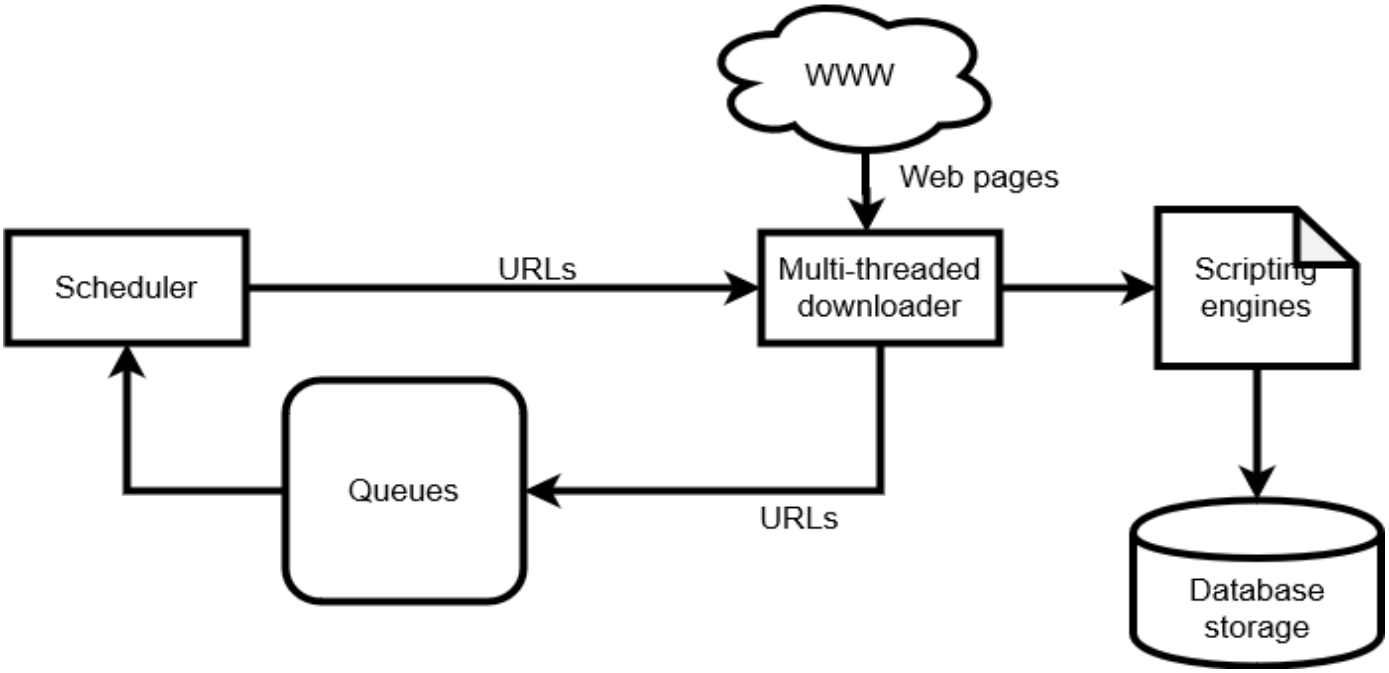

Figure 2: Workflow of developed University ranking web-scraping technology

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.

3. RESULTS AND DISCUSSION

3.1 RESULTS

Table 1 show the 17 criteria used in developing the proposed ranking system while Table 3 shows the computed weight (%) for each of the 17 criteria. Table 4 shows the result of the ranking as at 2nd May 2020. Table 3 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 22 (academic staff at professorial level) were assigned the least weight of 2%. Note that criteria 19, 21 and 22 were not assigned any weight by the original ranking system that proposed them, but here we consider them very important and hence assigned them some weights as indicated.

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.

3.2 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 2 ranking systems that ranked most of the Universities in Nigeria, these are the NUC [13] 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 only compared the ranking from our system with that of WRWU. Our system agrees very well with WRWU 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. Our system can be trusted better than WRWU because WRWU used only 4 criteria whereas our system used 17 criteria. Additionally, the criteria used by our system are very objective and can indicate 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 criteria used by most global ranking system are not easily obtainable in the developing countries but the criteria used by the proposed system are easily obtainable. Another strength is the objective computation of the weights assigned to the criteria used, whereas many ranking systems chose weights subjectively, we emperically calculated the weights used based. The proposed system is better than WRWU and NUC because we included some useful criteria not used by NUC and WRWU, for example number of Nobel prizes

won by alumni, the number of times faculties were cited 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.

4. 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 result of the ranking agrees with intuition and general believe of many Nigerians. We believe that the proposed ranking system will give a better and more reliable ranking result for universities in developing nations than other existing ranking systems because it contain realistic and objective parameters easily obtainable in developing nations.

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COMPETING INTERESTS

We declare that there are no competing interests that exist and this research do not received any grant or fund from either public or private organization.

AUTHORS' CONTRIBUTIONS

Atanbiyi Gabriel Babatunde conducted literature review, performed experiments and wrote the first draft of the paper. Benjamin Segun Aribisala conceived and designed the study, performed experiments, supervised the entire work and wrote the final draft of the paper. Oluwayemisi Nyaaku conducted literature review and contributed to the first draft. Olabanjo Olushola Aanu was involved in data collection, contributed to the first draft and was involved in software development. All authors read and approved the final draft of the manuscript.

Table 3: Weight (%) Assigned to the Criteria Selected for the Proposed Ranking System

Criteria Number	Number of Ranking System using the criteria	Existing Weight used by various Ranking System	Assigned Weight (%)
4	8	20%, 12.5%, 20%, 10%, ( ), 13%, 6.7%, ( )	10%
3	4	20%, 10%, ( ), 6.7%	10%
2	4	20%, 6.7%, ( )	10%
9	3	20%, 20%, ( )	10%
12	2	20%, 20%	10%
15	1	10%	10%
6	3	25%, 5%, 5%	5%
5	2	50%, 5%	5%
7	2	12.5%, 10%	5%
1	1	10%	5%
22	1	( )	4%
10	4	5%, 5%, 3%, ( )	3%
11	4	5%, 6.7%, 5%, 2%	3%
18	3	5%, 4.5%, ( )	3%
17	2	6%, ( )	3%
19	1	( )	2%
21	1	( )	2%
		TOTAL	**100%**

Note that ( ) means no value of output weight was assigned.

Table 4: Ranking of Nigerian Universities using the Proposed Ranking System

S/N	Name of Nigeria Universities	Score (%)	Position
1	University of Ibadan	3.19×10^{1}	1st
2	Obafemi Awolowo University, Ile-Ife	3.16×10^{1}	2nd
3	University of Lagos, Akoka	1.86×10^{1}	3rd
4	University of Benin	5.68×10^{0}	4th
5	University of Ilorin	4.40×10^{0}	5th
6	Covenant University Ota	2.82×10^{0}	6th
7	University of Nigeria, Nsukka	1.44×10^{0}	7th
8	Ahmadu Bello University, Zaria	3.85×10^{-1}	8th
9	AfeBabalola University, Ado-Ekiti - Ekiti State	3.03×10^{-1}	9th
10	Usmanu Danfodiyo University, Sokoto	2.97×10^{-1}	10th
11	Lagos State University, Ojo	2.11×10^{-1}	11th
12	Bayero University, Kano	1.99×10^{-1}	12th
13	Ladoke Akintola University of Technology	1.89×10^{-1}	13th
14	NnamdiAzikiwe University, Awka	1.24×10^{-1}	14th
15	Ekiti State University	1.22×10^{-1}	15th
16	University of Calabar	1.19×10^{-1}	16th
17	Tai Solarin University of Education, Ijebu Ode	1.01×10^{-1}	17th
18	Federal University of Agriculture, Abeokuta	9.13×10^{-2}	18th
19	Federal University of Technology, Owerri	8.80×10^{-2}	19th
20	Federal University, Lafia, Nasarawa State	8.76×10^{-2}	20th
21	Augustine University	8.76×10^{-2}	21st
22	SuleLamido University, Kafin Hausa, Jigawa	8.34×10^{-2}	22nd
23	Summit University	7.25×10^{-2}	23rd
24	Novena University, Ogume	7.12×10^{-2}	24th
25	Ambrose Alli University, Ekpoma	7.08×10^{-2}	25th
26	Bingham University, New Karu	6.58×10^{-2}	26th
27	Enugu State University of Science and Technology	6.10×10^{-2}	27th
28	Ondo State University of Medical Sciences	5.32×10^{-2}	28th
29	Federal University of Technology, Akure	5.23×10^{-2}	29th
30	Kola Daisi University Ibadan, Oyo State	4.82×10^{-2}	30th
31	Kogi State University Anyigba	4.78×10^{-2}	31st
32	Olabisi Onabanjo University, Ago Iwoye	4.11×10^{-2}	32nd
33	Al-Qalam University, Katsina	3.74×10^{-2}	33rd
34	Kwara State University, Ilorin	3.65×10^{-2}	34th
35	University of Uyo, Uyo	3.32×10^{-2}	35th
36	Federal University of Petroleum Resources, Effurun	2.84×10^{-2}	36th

37	University of Africa Toru Orua, Bayelsa State	2.69×10^{-2}	37th
38	Federal University, Oye-Ekiti, Ekiti State	2.40×10^{-2}	38th
39	Umar Musa YarAdua University Katsina	2.14×10^{-2}	39th
40	African University of Science & Technology, Abuja	2.07×10^{-2}	40th
41	PAMO University of Medical Sciences, Portharcourt	2.06×10^{-2}	41st
42	Nasarawa State University Keffi	2.01×10^{-2}	42nd
43	AdekunleAjasin University, Akungba	1.97×10^{-2}	43rd
44	Southwestern University, Oku Owa	1.96×10^{-2}	44th
45	Federal University, Dutsin-Ma, Katsina	1.62×10^{-2}	45th
46	Tansian University, Umunya	1.39×10^{-2}	46th
47	Ebonyi State University, Abakaliki	1.32×10^{-2}	47th
48	Kano University of Science & Technology, Wudil	1.24×10^{-2}	48th
49	Mountain Top University	1.19×10^{-2}	49th
50	Federal University, Gusau, Zamfara	1.14×10^{-2}	50th
51	Air Force Institute of Technology, Kaduna	1.13×10^{-2}	51st
52	Sokoto State University	1.08×10^{-2}	52nd
53	Federal University of Technology, Minna	1.06×10^{-2}	53rd
54	Bauchi State University, Gadau	9.39×10^{-3}	54th
55	Edwin Clark University, Kaigbodo	8.84×10^{-3}	55th
56	River State University	7.92×10^{-3}	56th
57	Michael Okpara University of Agricultural, Umudike	6.12×10^{-3}	57th
58	Kings University, Ode Omu	6.08×10^{-3}	58th
59	Bells University of Technology, Otta	5.99×10^{-3}	59th
60	Federal University, Kashere, Gombe State	5.61×10^{-3}	60th
61	Federal University, Birnin-Kebbi	5.15×10^{-3}	61st
62	Paul University, Awka - Anambra State	5.11×10^{-3}	62nd
63	Hezekiah University, Umudi	4.86×10^{-3}	63rd
64	Landmark University, Omu-Aran.	4.65×10^{-3}	64th
65	Obong University, ObongNtak	4.53×10^{-3}	65th
66	Ondo State University of Science and Technology Okitipu	4.48×10^{-3}	66th
67	University of Port Harcourt, Port Harcourt	4.19×10^{-3}	67th
68	Joseph Ayo Babalola University, Ikeji-Arakeji	4.07×10^{-3}	68th
69	AbubakarTafawaBalewa University, Bauchi	3.78×10^{-3}	69th
70	Lead City University, Ibadan	3.78×10^{-3}	70th
71	Osun State University Osogbo	3.71×10^{-3}	71st
72	AkwaI-bom State University, Ikot Akpaden	3.66×10^{-3}	72nd
73	Christopher University Mowe	3.64×10^{-3}	73rd
74	Madonna University, Okija	3.55×10^{-3}	74th
75	Legacy University, Okija, Anambra State	3.50×10^{-3}	75th
76	Crescent University	3.48×10^{-3}	76th
77	Abia State University, Uturu	3.31×10^{-3}	77th

78	Nile University of Nigeria, Abuja	3.23×10^{-3}	78th
79	Adeleke University, Ede	3.16×10^{-3}	79th
80	Greenfield University, Kaduna	2.95×10^{-3}	80th
81	Mcpherson University, Seriki Sotayo, Ajebo	2.88×10^{-3}	81st
82	Evangel University, Akaeze	2.79×10^{-3}	82nd
83	Imo State University, Owerri	2.63×10^{-3}	83rd
84	Igbinedion University Okada	2.49×10^{-3}	84th
85	Spiritan University, Nneochi, Abia State	2.06×10^{-3}	85th
86	Federal University Gashua, Yobe	2.06×10^{-3}	86th
87	Federal University, Dutse, Jigawa State	1.97×10^{-3}	87th
88	Hallmark University, Ijebi-Itele, Ogun	1.95×10^{-3}	88th
89	Crown Hill University Eiyenkorin, Kwara State	1.95×10^{-3}	89th
90	Dominican University Ibadan Oyo State	1.84×10^{-3}	90th
91	Arthur Javis University, Akpoyubo, Cross river State	1.79×10^{-3}	91st
92	Bornu State University, Maiduguri	1.73×10^{-3}	92nd
93	American University of Nigeria, Yola	1.42×10^{-3}	93rd
94	University of Agriculture, Makurdi	1.40×10^{-3}	94th
95	Eastern Palm University Ogboko, Imo State	1.36×10^{-3}	95th
96	Godfrey Okoye University, Ugwuomu-Nike - Enugu State	1.33×10^{-3}	96th
97	AjayiCrowther University, Ibadan	1.30×10^{-3}	97th
98	Samuel Adegboyega University, Ogwa.	1.27×10^{-3}	98th
99	Baze University	1.03×10^{-3}	99th
100	Ignatius Ajuru University of Education, Rumuolumeni	1.01×10^{-3}	100th
101	Fountain Unveristy, Oshogbo	9.26×10^{-4}	101st
102	Chukwuemeka Odumegwu Ojukwu University, Uli	9.18×10^{-4}	102nd
103	Oduduwa University, Ipetumodu - Osun State	9.09×10^{-4}	103rd
104	Pan-Atlantic University, Lagos	8.89×10^{-4}	104th
105	Benue State University, Makurdi	8.72×10^{-4}	105th
106	Federal University, Otuoke, Bayelsa	8.30×10^{-4}	106th
107	Ibrahim Badamasi Babangida University, Lapai	8.21×10^{-4}	107th
108	Gregory University, Uturu	8.00×10^{-4}	108th
109	University of Abuja, Gwagwalada	7.68×10^{-4}	109th
110	Eko University of Medical and Health Sciences Ijanikin	7.42×10^{-4}	110th
111	Gombe State Univeristy, Gombe	7.29×10^{-4}	111st
112	Gombe State University of Science and Technology	6.91×10^{-4}	112th
113	Plateau State University Bokkos	6.62×10^{-4}	113th
114	Delta State University Abraka	6.58×10^{-4}	114th
115	Redeemers University, Ede	6.37×10^{-4}	115th
116	Chrisland University	6.29×10^{-4}	116th
117	Anchor University, Ayobo Lagos State	6.25×10^{-4}	117th

118	National Open University of Nigeria, Lagos	5.79×10^{-4}	118th
119	Niger Delta University Yenagoa	5.07×10^{-4}	119th
120	Babcock University,Ilishan-Remo	4.92×10^{-4}	120th
121	Salem University, Lokoja	4.82×10^{-4}	121st
122	Adamawa State University Mubi	4.49×10^{-4}	122nd
123	Edo University Iyamo	4.48×10^{-4}	123rd
124	Al-Hikmah University, Ilorin	3.69×10^{-4}	124th
125	Taraba State University, Jalingo	3.27×10^{-4}	125th
126	Caritas University, Enugu	3.23×10^{-4}	126th
127	Nigerian Defence Academy Kaduna	2.89×10^{-4}	127th
128	Kaduna State University, Kaduna	2.72×10^{-4}	128th
129	Achievers University, Owo	2.60×10^{-4}	129th
130	Cross River State University of Technology, Calabar	2.47×10^{-4}	130th
131	Precious Cornerstone University, Oyo	2.43×10^{-4}	131st
132	Crawford University Igbesa	2.43×10^{-4}	132nd
133	Modibbo Adama University of Technology, Yola	2.43×10^{-4}	133rd
134	Oyo State Technical University Ibadan	2.18×10^{-4}	134th
135	Federal University, Wukari, Taraba State	1.80×10^{-4}	135th
136	Bowen University, Iwo	1.72×10^{-4}	136th
137	Kebbi State University of Science and Technology, Aliero	1.63×10^{-4}	137th
138	Benson Idahosa University, Benin City	1.51×10^{-4}	138th
139	Federal University, Lokoja, Kogi State	1.38×10^{-4}	139th
140	Renaissance University, Enugu	1.26×10^{-4}	140th
141	Skyline University, Kano	1.14×10^{-4}	141st
142	Ritman University, IkotEkpene, AkwaIbom	7.92×10^{-5}	142nd
143	Nigerian Maritime University Okerenkoko, Delta State	6.40×10^{-5}	143rd
144	Rhema University, Obeama-Asa - Rivers State	4.53×10^{-5}	144th
145	Micheal & Cecilia Ibru University	4.23×10^{-5}	145th
146	Trinity University Ogun State	4.14×10^{-5}	146th
147	Elizade University, Ilara-Mokin	4.12×10^{-5}	147th
148	Moshood Abiola University of Science and Technology	3.36×10^{-5}	148th
149	Kwararafa University, Wukari	3.35×10^{-5}	149th
150	Nigerian Army University Biu	2.52×10^{-5}	150th
151	Nigeria Police Academy Wudil	1.65×10^{-5}	151st
152	Yobe State University, Damaturu	9.66×10^{-6}	152nd
153	University of Medical Sciences, Ondo City	7.81×10^{-6}	153rd
154	Coal City University Enugu State	5.75×10^{-6}	154th
155	University of Jos, Jos	4.50×10^{-6}	155th
156	Yusuf Maitama Sule University, Kano	4.47×10^{-6}	156th
157	University of Maiduguri	3.62×10^{-6}	157th

158	Veritas University	1.31×10^{-6}	158th
159	Wesley University, Ondo	1.23×10^{-6}	159th
160	Wellspring University, Evbuobanosa	8.41×10^{-7}	160th
161	University of Mkar, Mkar	5.82×10^{-7}	161st
162	Alex Ekwueme Federal University Ndufu Alike	5.02×10^{-7}	162nd
163	Western Delta University, Ogahara, Delta State	4.71×10^{-7}	163rd
164	Caleb University, Lagos	2.29×10^{-8}	164th
165	Clifford University OwerrintaAbia State	1.90×10^{-8}	165th
166	Bayelsa Medical University	1.66×10^{-8}	166th

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