



RESEARCH TRENDS IN NIGERIAN UNIVERSITIES: ANALYSIS OF NUMBER OF PUBLICATIONS IN SCOPUS (2008-2017)

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ABSTRACT

Among other things, the performance of a university can be measured based on the volume and the impact of their scholarly research publications. However, the empirical evidence that are needed for objective analysis, evaluation, and ranking of universities based on this factor are often not readily and freely accessible to the public. In this paper, the trends of research publications in Nigerian Universities are analyzed. The total number of scholarly articles published by academic researchers in 67 Nigerian universities over a period of ten years (2008-2017) were sourced from Scopus abstracting/indexing database. Nigerian universities covered include 32 federal universities, 26 state universities, and nine private universities. The publication trends are presented using tables and graphs. Also, yearly percentage growth in scholarly research outputs are computed for each university. In practice, the insights provided will propel a more informed policy formulation and implementation towards improving institutional academic research productivity.

Key words: Research Publications, Scopus, Nigerian Universities, Education.

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1. INTRODUCTION

Socio-economic development in Africa largely depend on the level of applicable knowledge generated and disseminated by universities in the continent. Relative to the contribution of universities in other parts of the world, knowledge produced in African universities has been rated low (1.6% of the total global research publication outputs) [1]. Conradie *et al* [2] conducted a quantitative and qualitative survey of clinical researchers in 27 African countries in a bid to understand the particular barriers to clinical research in this environment. In order to measure the contributions of academic researchers in African universities, Abd-Allah *et al* [3] reviewed the publications of neuroscience research within the 52 African countries. In a different study, Chiware & Becker [1] analyzed the trends of research publications in the field of applied sciences at Universities of Technology in South Africa. Useful information about a typical African university can be found in [4-7].

For better understanding of the contributions of African researchers to global scholarly publications, there is a need to encourage more bibliometric and scientometric studies. Hence, required data must be made freely and publicly available in an easily reproducible format. In this paper, the trends of research publications in Nigerian Universities are analyzed. The findings of this paper will help university administrators in Nigeria to gain better understanding of the trends of scholarly research publications in their respective universities. In practice, the insights gained will propel a more informed policy formulation and implementation towards improving institutional academic research productivity. The comprehensive analysis of the trends of scholarly research publications in Nigerian universities will help the National Universities Commission (NUC) in fulfilling her vision, mission, mandate, and functions of developing and monitoring research policy for the Nigerian University System (NUS) in line with national goals and needs. Measurement of the volume, income, reputation, and influence of academic research carried out and published by universities is a major performance indicator in world university rankings. In addition, free access to this information will help postgraduate students, academics, university leaders, industry, and the Federal Ministry of Education to identify universities with highest research potentials that can engender productive partnerships and collaborations. Furthermore, the data provided may facilitate bibliometric and scientometric studies on this subject.

2. METHODOLOGY

Although there are many abstracting and citation databases of scientific and technical literature, data contained in this data article were extracted from *Scopus* abstracting/indexing database only. *Scopus* contains the largest number of peer-reviewed multidisciplinary publications with the following outstanding records: (a) over 5,000 publishers (b) more than 22,800 serial titles (c) above 150,000 books (d) approximately 70,000 main institutional profiles (e) 70 million items (f) 60 million author profiles and (g) 1.4 billion cited references dating back to 1970.

Scopus database was systematically queried to retrieve information about the research outputs of accredited universities in Nigeria. The search was conducted based on affiliation with “Nigeria” as the country of preference. This search query returned 171 Nigerian affiliation results. The activities of universities in Nigeria are coordinated, monitored, and regulated by the National Universities Commission (NUC). The list of accredited Nigerian universities is categorized into three groups namely: federal, state, and private universities. In Nigeria, there are 165 accredited universities i.e. 43 federal universities, 47 state universities, and 75 private universities. However, only 67 of these universities (32 federal universities, 26 state universities, and 9 private universities) are indexed in *Scopus* as institutional affiliations of Nigerian researchers. The remaining 104 affiliation results were discarded as such names

cannot be found on the list of accredited universities in Nigeria as regulated by the NUC. The lists of abbreviations (and the full meanings) of the names of federal, state, and private universities are presented in Tables 1-3 respectively.

Table 1. List of Nigerian federal universities indexed in Scopus database

Abbreviation	Full Meaning
ABU	Ahmadu Bello University
ATBU	Abubakar Tafawa Balewa University
BUK	Bayero University, Kano
FUAAB	Federal University of Agriculture, Abeokuta
FUD	Federal University Dutse
FUDM	Federal University Dutsin-ma
FUL	Federal University Lafia
FULO	Federal University Lokoja
FUO	Federal University Otuoke
FUOYE	Federal University Oye-Ekiti
FUTA	Federal University of Technology, Akure
FUTM	Federal University of Technology, Modibbo Adama
FUTMINNA	Federal University of Technology, Minna
FUTO	Federal University of Technology, Owerri
FUW	Federal University Wukari
MOUAU	Michael Okpara University of Agriculture, Umudike
NAU	Nnamdi Azikiwe University
NOUN	National Open University of Nigeria
OAU	Obafemi Awolowo University
UAM	University of Agriculture, Markudi
UDU	Usmanu Danfodiyo University
UI	University of Ibadan
UNIBEN	University of Benin
UNICAL	University of Calabar
UNILAG	University of Lagos
UNILORIN	University of Ilorin
UNIMAID	University of Maiduguri
UNIPORT	University of Port Harcourt
UNIUYO	University of Uyo
UNN	University of Nigeria, Nsukka
UNNAB	University of Abuja

Table 2. List of Nigerian state universities indexed in Scopus database

Abbreviation	Full Meaning
AAU	Adekunle Ajasin University
AISU	Akwa Ibom State University
AMAU	Ambrose Alli University
ANSU	Anambra State University
ASU	Abia State University
BSU	Bauchi State University
DESU	Delta State University
EBSU	Ebonyi State University
ESUST	Enugu State University of Science and Technology
EUI	Edo University, Iyamho
IIBU	Ibrahim Badamasi Babangida University
ISU	Imo State University
KASU	Kaduna State University

KSU	Kwara State University
KSUST	Kebbi State University of Science and Technology
KUST	Kano University of Science and Technology
LASU	Lagos State University
LAUTECH	Ladoke Akintola University of Technology
OOU	Olabisi Onabanjo University
OSU	Osun State University
PSU	Plateau State University
RSUST	Rivers State University of Science and Technology
SSU	Sokoto State University
TSU	Taraba State University
UMYU	Umaru Musa Yar'adua University
YSUD	Yobe State University Damaturu

Table 3. List of Nigerian private universities indexed in Scopus database

Abbreviation	Full Meaning
ABUAD	Afe Babalola University
BIU	Benson Idahosa University
BU	Bingham University
BUT	Bells University of Technology
CU	Covenant University
LCU	Lead City University
LU	Landmark University
NUN	Nile University of Nigeria
RU	Redeemer's University

3. RESULTS AND DISCUSSION

Total number of scholarly articles published by academic researchers in the identified 67 Nigerian universities over a period of 10 years (2008-2017) were collected from Scopus database. The data collected were properly formatted in a Microsoft Excel Spreadsheet file for easy data presentation and data analysis. Percentage growth rate analysis of each of the university category were performed using MATLAB 2016a software produced by Mathworks Inc.

The number of research outputs published by federal, state, and private universities in Nigeria over the last ten years are presented in Tables 4-6 respectively. Figures 1-4 show the trends of research publications in top ten Nigerian universities, top ten Nigerian federal universities, top ten Nigerian state universities, and top ten Nigerian private universities as ranked in *Scopus* abstracting/indexing database. Tables 7-9 present data on the percentage growth rate of research outputs of Nigerian federal, state, and private universities respectively.

Table 4. Scholarly research publication outputs of federal universities in Nigeria

Rank	University	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1	UI	741	739	816	871	864	820	818	785	920	967
2	UNN	358	331	400	457	406	416	529	522	623	632
3	OAU	227	409	364	595	355	423	418	427	471	575
4	UNILAG	238	351	357	429	413	343	345	381	358	448
5	ABU	336	240	229	375	327	313	310	290	311	316
6	UNILORIN	217	257	273	284	262	245	317	262	301	391
7	UNIBEN	176	334	298	305	294	274	243	245	188	220
8	FUTA	89	165	145	175	196	169	209	205	250	315
9	UNIPORT	129	172	158	210	210	173	169	194	259	189
10	UNICAL	107	142	152	160	173	173	192	178	169	162

11	NAU	82	80	118	149	137	137	134	157	184	151
12	UNIUYO	62	124	148	137	169	128	139	105	109	137
13	BUK	87	55	70	88	87	105	98	154	149	162
14	UNIMAID	47	105	121	106	131	103	126	94	92	104
15	FUAAB	63	4	6	4	45	104	141	157	197	207
16	FUTMINNA	43	39	72	76	86	99	109	96	142	117
17	FUTO	45	55	105	109	68	72	87	85	65	88
18	UDU	127	45	59	77	48	72	82	71	90	99
19	UNNAB	43	40	44	65	79	69	66	72	95	66
20	MOUAU	45	56	50	84	60	61	61	58	51	80
21	UAM	21	47	64	77	76	61	44	35	53	51
22	ATBU	21	12	22	33	17	21	44	54	74	49
23	FUOYE	23	0	0	0	2	10	26	25	57	89
24	FUTM	0	21	23	26	21	27	20	22	21	26
25	FUD	0	0	0	0	0	7	7	11	14	49
26	FUW	4	0	0	0	0	14	16	13	15	28
27	NOOUN	0	3	12	14	18	8	7	10	10	9
28	FUL	0	0	0	0	1	3	12	15	23	19
29	FUDM	0	0	0	0	0	6	12	17	15	10
30	FULO	0	0	0	0	1	1	4	4	10	13
31	FUO	0	0	0	0	0	0	8	7	8	12
32	FUBK	0	0	0	0	0	0	0	0	1	4

Table 5. Scholarly research publication outputs of state universities in Nigeria

Rank	University	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1	LAUTECH	104	129	160	167	170	191	160	143	146	167
2	DESU	127	164	186	222	160	128	110	103	81	62
3	LASU	114	118	115	133	120	117	148	122	114	133
4	OOU	109	122	134	115	112	87	83	69	109	79
5	EBSU	88	65	83	66	32	47	50	52	88	93
6	RSUST	51	88	71	44	42	28	45	43	46	45
7	AMAU	61	81	71	63	43	33	32	33	23	30
8	AAU	22	35	46	43	35	62	50	43	40	39
9	OSU	50	6	17	35	50	60	47	51	46	50
10	ISU	25	32	25	45	25	38	30	29	27	31
11	ASU	0	48	35	37	42	26	16	17	25	15
12	KSU	6	0	0	0	0	0	31	47	68	68
13	ESUST	0	7	17	21	8	13	14	22	26	25
14	ANSU	10	6	11	25	30	34	20	13	22	7
15	KUST	1	4	9	10	12	9	12	14	13	23
16	KASU	1	0	5	2	4	6	11	22	20	34
17	KSUST	2	0	9	16	8	3	13	1	8	22
18	AISU	0	0	1	2	6	15	6	11	17	15
19	IIBU	0	0	3	8	6	9	7	10	16	19
20	BSU	0	0	0	0	0	3	3	9	11	40
21	UMYU	0	1	2	1	1	7	8	7	19	13
22	TSU	0	0	2	6	9	3	7	2	3	5
23	EUI	0	0	0	0	0	0	0	0	2	9
24	PSU	0	0	0	0	0	2	2	1	2	5
25	SSU	0	0	0	0	0	0	0	2	3	1
26	YSUD	0	0	0	0	0	0	0	0	1	2

Table 6. Scholarly research publication outputs of private universities in Nigeria

Rank	University	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1	CU	56	77	99	110	110	168	230	307	444	548
2	ABUAD	0	0	0	4	3	34	42	49	103	121
3	RU	7	19	39	43	60	47	47	31	34	36
4	LU	0	0	1	6	9	17	32	32	56	72
5	BUT	14	23	21	21	18	17	15	17	39	26
6	NUN	9	0	0	0	0	25	20	6	7	12
7	BIU	0	17	13	16	12	2	7	3	4	6
8	BU	2	0	4	4	12	6	2	12	12	13
9	LCU	1	4	12	12	7	6	2	6	4	9

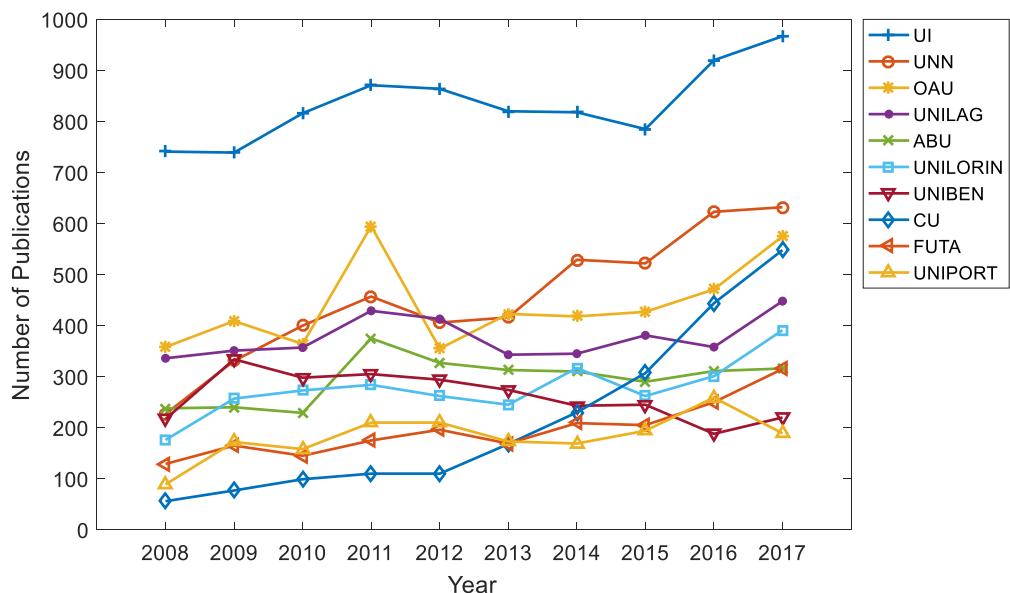


Figure 1. Trends of research publications in top 10 Nigerian universities

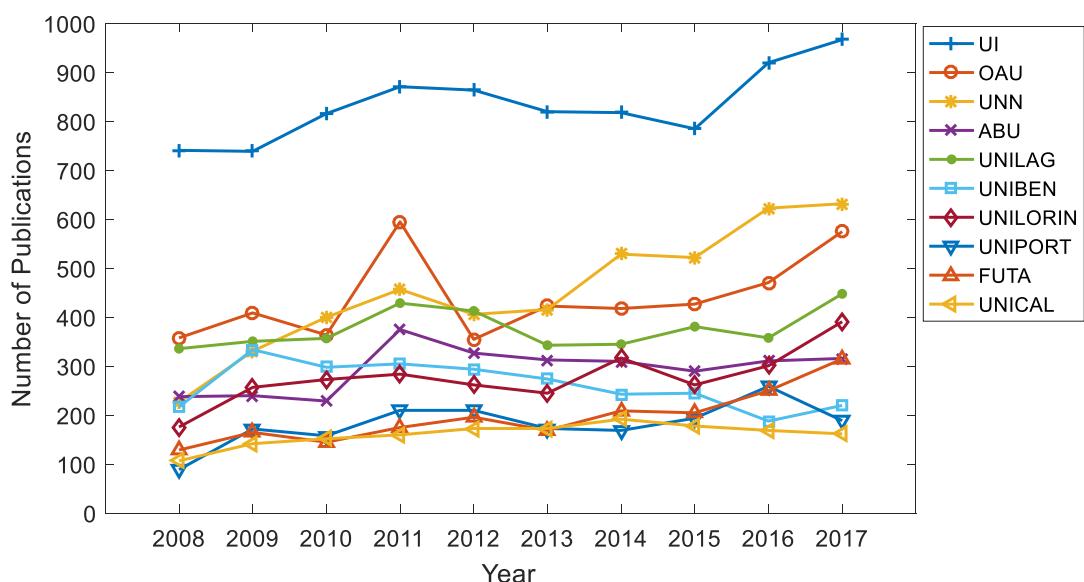


Figure 2. Trends of research publications in top 10 Nigerian federal universities

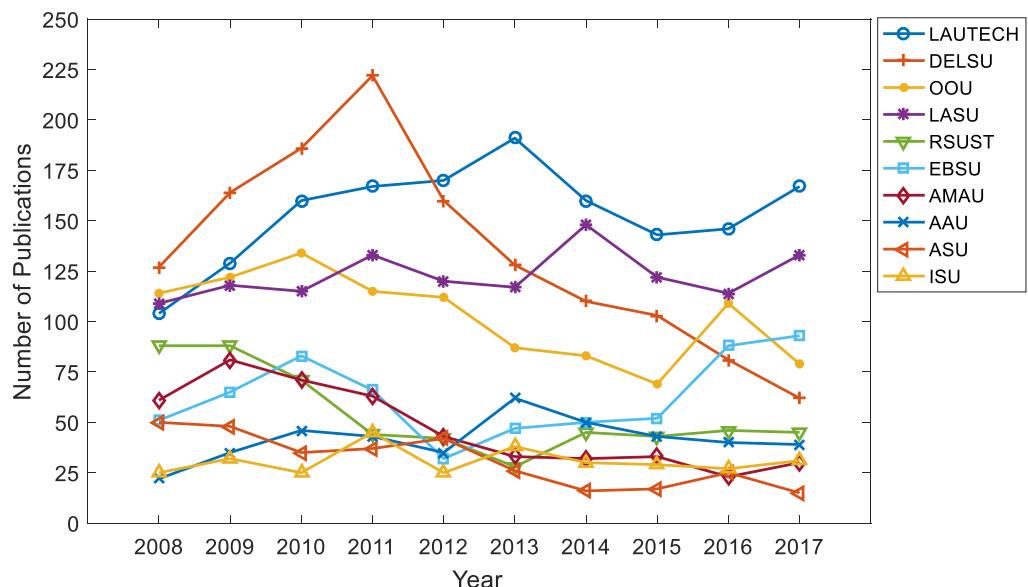


Figure 3. Trends of research publications in top 10 Nigerian state universities

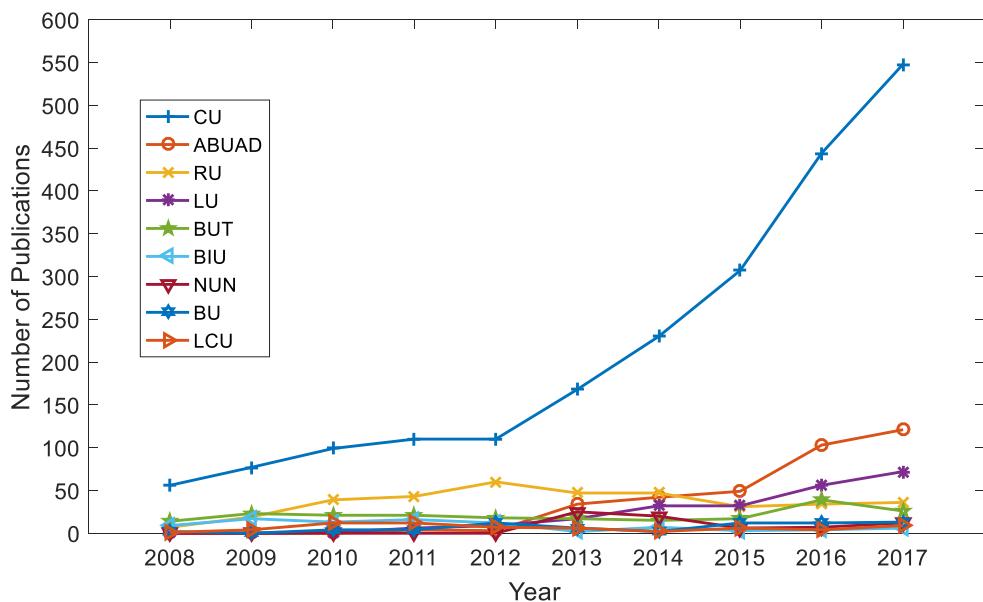


Figure 4. Trends of research publications in top 10 Nigerian private universities

Table 7. Percentage growth rate of research outputs of Nigerian federal universities

S/N	University	2009 - 2010 (%)	2010 - 2011 (%)	2011 - 2012 (%)	2012 - 2013 (%)	2013 - 2014 (%)	2014 - 2015 (%)	2015 - 2016 (%)	2016 - 2017 (%)
1	UI	10.42	6.74	-0.80	-5.09	-0.24	-4.03	17.20	10.42
2	OAU	-11.00	63.46	-40.34	19.15	-1.18	2.15	10.30	-11.00
3	UNN	20.85	14.25	-11.16	2.46	27.16	-1.32	19.35	20.85
4	ABU	-4.58	63.76	-12.80	-4.28	-0.96	-6.45	7.24	-4.58
5	UNILAG	1.71	20.17	-3.73	-16.95	0.58	10.43	-6.04	1.71
6	UNIBEN	-10.78	2.35	-3.61	-6.80	-11.31	0.82	-23.27	-10.78
7	UNILORIN	6.23	4.03	-7.75	-6.49	29.39	-17.35	14.89	6.23
8	UNIPORT	-8.14	32.91	0.00	-17.62	-2.31	14.79	33.51	-8.14
9	FUTA	-12.12	20.69	12.00	-13.78	23.67	-1.91	21.95	-12.12
10	UNICAL	7.04	5.26	8.13	0.00	10.98	-7.29	-5.06	7.04
11	UNIMAID	15.24	-12.40	23.58	-21.37	22.33	-25.40	-2.13	15.24

12	NAU	47.50	26.27	-8.05	0.00	-2.19	17.16	17.20	47.50
13	UNIUYO	19.35	-7.43	23.36	-24.26	8.59	-24.46	3.81	19.35
14	BUK	27.27	25.71	-1.14	20.69	-6.67	57.14	-3.25	27.27
15	FUTO	90.91	3.81	-37.61	5.88	20.83	-2.30	-23.53	90.91
16	FUTMINNA	84.62	5.56	13.16	15.12	10.10	-11.93	47.92	84.62
17	UDU	31.11	30.51	-37.66	50.00	13.89	-13.41	26.76	31.11
18	FUAAB	50.00	-33.33	1025.00	131.11	35.58	11.35	25.48	50.00
19	UAM	36.17	20.31	-1.30	-19.74	-27.87	-20.45	51.43	36.17
20	MOUAU	-10.71	68.00	-28.57	1.67	0.00	-4.92	-12.07	-10.71
21	UNNAB	10.00	47.73	21.54	-12.66	-4.35	9.09	31.94	10.00
22	ATBU	83.33	50.00	-48.48	23.53	109.52	22.73	37.04	83.33
23	FUTM	9.52	13.04	-19.23	28.57	-25.93	10.00	-4.55	9.52
24	FUOYE	-	-	-	400.00	160.00	-3.85	128.00	-
25	FUD	-	-	-	-	0.00	57.14	27.27	-
26	NOUN	300.00	16.67	28.57	-55.56	-12.50	42.86	0.00	300.00
27	FUW	-	-	-	-	14.29	-18.75	15.38	-
28	FUL	-	-	-	200.00	300.00	25.00	53.33	-
29	FUDM	-	-	-	-	100.00	41.67	-11.76	-
30	FUO	-	-	-	-	-	-12.50	14.29	-
31	FULO	-	-	-	0.00	300.00	0.00	150.00	-
32	FUBK	-	-	-	-	-	-	-	-

Table 8. Percentage growth rate of research outputs of Nigerian state universities

S/N	University	2009 – 2010 (%)	2010 – 2011 (%)	2011 – 2012 (%)	2012 – 2013 (%)	2013 – 2014 (%)	2014 – 2015 (%)	2015 – 2016 (%)	2016 – 2017 (%)
1	UI	10.42	6.74	-0.80	-5.09	-0.24	-4.03	17.20	10.42
2	OAU	-11.00	63.46	-40.34	19.15	-1.18	2.15	10.30	-11.00
3	UNN	20.85	14.25	-11.16	2.46	27.16	-1.32	19.35	20.85
4	ABU	-4.58	63.76	-12.80	-4.28	-0.96	-6.45	7.24	-4.58
5	UNILAG	1.71	20.17	-3.73	-16.95	0.58	10.43	-6.04	1.71
6	UNIBEN	-10.78	2.35	-3.61	-6.80	-11.31	0.82	-23.27	-10.78
7	UNILORIN	6.23	4.03	-7.75	-6.49	29.39	-17.35	14.89	6.23
8	UNIPORT	-8.14	32.91	0.00	-17.62	-2.31	14.79	33.51	-8.14
9	FUTA	-12.12	20.69	12.00	-13.78	23.67	-1.91	21.95	-12.12
10	UNICAL	7.04	5.26	8.13	0.00	10.98	-7.29	-5.06	7.04
11	UNIMAID	15.24	-12.40	23.58	-21.37	22.33	-25.40	-2.13	15.24
12	NAU	47.50	26.27	-8.05	0.00	-2.19	17.16	17.20	47.50
13	UNIUYO	19.35	-7.43	23.36	-24.26	8.59	-24.46	3.81	19.35
14	BUK	27.27	25.71	-1.14	20.69	-6.67	57.14	-3.25	27.27
15	FUTO	90.91	3.81	-37.61	5.88	20.83	-2.30	-23.53	90.91
16	FUTMINNA	84.62	5.56	13.16	15.12	10.10	-11.93	47.92	84.62
17	UDU	31.11	30.51	-37.66	50.00	13.89	-13.41	26.76	31.11
18	FUAAB	50.00	-33.33	1025.00	131.11	35.58	11.35	25.48	50.00
19	UAM	36.17	20.31	-1.30	-19.74	-27.87	-20.45	51.43	36.17
20	MOUAU	-10.71	68.00	-28.57	1.67	0.00	-4.92	-12.07	-10.71
21	UNNAB	10.00	47.73	21.54	-12.66	-4.35	9.09	31.94	10.00
22	ATBU	83.33	50.00	-48.48	23.53	109.52	22.73	37.04	83.33
23	FUTM	9.52	13.04	-19.23	28.57	-25.93	10.00	-4.55	9.52
24	FUOYE	-	-	-	400.00	160.00	-3.85	128.00	-
25	FUD	-	-	-	-	0.00	57.14	27.27	-
26	NOUN	300.00	16.67	28.57	-55.56	-12.50	42.86	0.00	300.00
27	FUW	-	-	-	-	14.29	-18.75	15.38	-
28	FUL	-	-	-	200.00	300.00	25.00	53.33	-
29	FUDM	-	-	-	-	100.00	41.67	-11.76	-
30	FUO	-	-	-	-	-	-12.50	14.29	-
31	FULO	-	-	-	0.00	300.00	0.00	150.00	-
32	FUBK	-	-	-	-	-	-	-	-

Table 9. Percentage growth rate of research outputs of Nigerian private universities

S/N	University	2009 -	2010 -	2011 -	2012 -	2013 -	2014 -	2015 -	2016 -
		2010	2011	2012	2013	2014	2015	2016	2017
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
1	CU	37.50	28.57	11.11	0.00	52.73	36.90	33.48	44.63
2	ABUAD	0.00	0.00	0.00	-25.00	1033.33	23.53	16.67	110.20
3	RU	171.43	105.26	10.26	39.53	-21.67	0.00	-34.04	9.68
4	LU	0.00	0.00	500.00	50.00	88.89	88.24	0.00	75.00
5	BUT	64.29	-8.70	0.00	-14.29	-5.56	-11.76	13.33	129.41
6	BIU	88.89	-23.53	23.08	-25.00	-83.33	250.00	-57.14	33.33
7	NUN	0.00	0.00	0.00	0.00	0.00	-20.00	-70.00	16.67
8	BU	-100.00	0.00	0.00	200.00	-50.00	-66.67	500.00	0.00
9	LCU	300.00	200.00	0.00	-41.67	-14.29	-66.67	200.00	-33.33

4. CONCLUSIONS

In this paper, research trends in Nigerian Universities were analyzed based on the number of scholarly articles published in ten years (2008-2017). Out of the 165 NUC accredited universities in Nigeria, only 67 universities have research visibility in *Scopus* database. This shows that only 40.61% of the NUC accredited universities in Nigeria have research visibility in *Scopus*. The remaining 98 universities do not have any research output which bears their institutional affiliations indexed in *Scopus* within the selected 10-year range. The list of the 67 *Scopus*-indexed Nigerian universities comprises of 32 federal, 26 state, and 9 private universities. Whereas, there are 43 federal, 47 state, and 75 private universities in Nigeria as at the time of this study. This implies that the research outputs of 11 federal universities (25.58%), 21 state universities (44.68%) and those of 66 private universities (88%) are not visible in *Scopus*.

All the *Scopus*-indexed Nigerian universities were ranked based on the total number of research publications generated within the 10-year period. The list of top 10 *Scopus*-indexed Nigerian universities comprises of nine federal universities (UI, UNN, OAU, UNILAG, ABU, UNILORIN, UNIBEN, FUTA and UNIPORT) and one private university (CU). On the list of top 10 federal universities are UI, UNN, OAU, UNILAG, ABU, UNILORIN, UNIBEN, FUTA, UNIPORT and UNICAL with total publications of 8341, 4395, 4543, 2949, 3761, 2618, 2768, 1823, 1958 and 1608 respectively. In another category, LAUTECH, DESU, LASU, OOU, EBSU, RSUST, AMAU, AAU, OSU and ISU made the list of the top 10 state universities with total publications of 1537, 1343, 1024, 1229, 540, 627, 470, 415, 311 and 307 respectively. There are only nine *Scopus*-indexed universities in the private university category namely: CU, ABUAD, RU, LU, BUT, NUN, BIU, BU and LCU. The total numbers of research publications produced by these universities are 2149, 356, 363, 225, 211, 89, 70, 67 and 63 respectively.

In general, a larger percentage (88.1%) of the *Scopus*-indexed Nigerian universities has increased their contributions to the body of knowledge within the 10-year period. These universities include all the 32 *Scopus*-indexed federal universities, 20 out of the 26 *Scopus*-indexed state universities, and 7 out of the 9 *Scopus*-indexed private universities, making a total of 59. Eight out of the 67 *Scopus*-indexed Nigerian universities (11.9%) experienced different degree of decline in research publications from 2008 to 2017. The research outputs of OOU, BIU, RSUST, SSU, AAU, DSU, NUN and ASU declined by 30.7%, 33.3%, 48.9%, 50%, 50.8%, 51.2%, 52% and 70% respectively in 10 years. The findings of this paper will help university administrators in Nigeria to gain better understanding of the trends of scholarly research publications in their respective universities. In practice, the insights gained will propel a more informed policy formulation and implementation towards improving institutional academic research productivity.

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REFERENCES

- [1] E. R. T. Chiware and D. A. Becker, "Research trends and collaborations by applied science researchers in South African universities of technology: 2007–2017," *The Journal of Academic Librarianship*, vol. 44, pp. 468-476, 2018/07/01/ 2018.
- [2] A. Conradie, R. Duys, P. Forget, and B. M. Biccard, "Barriers to clinical research in Africa: a quantitative and qualitative survey of clinical researchers in 27 African countries," *British Journal of Anaesthesia*, vol. 121, pp. 813-821, 2018/10/01/ 2018.
- [3] F. Abd-Allah, N. Kissani, A. William, M. I. Oraby, R. R. Moustafa, E. Shaker, *et al.*, "Neuroscience research in Africa: Current status," *eNeurologicalSci*, vol. 3, pp. 7-10, 2016/06/01/ 2016.
- [4] J. A. Odukoya, S. I. Popoola, A. A. Atayero, D. O. Omole, J. A. Badejo, T. M. John, *et al.*, "Learning analytics: Dataset for empirical evaluation of entry requirements into engineering undergraduate programs in a Nigerian university," *Data in Brief*, vol. 17, pp. 998-1014, 2018/04/01/ 2018.
- [5] S. I. Popoola, A. A. Atayero, J. A. Badejo, T. M. John, J. A. Odukoya, and D. O. Omole, "Learning analytics for smart campus: Data on academic performances of engineering undergraduates in Nigerian private university," *Data in Brief*, vol. 17, pp. 76-94, 2018/04/01/ 2018.
- [6] S. I. Popoola, A. A. Atayero, J. A. Badejo, J. A. Odukoya, D. O. Omole, and P. Ajayi, "Datasets on demographic trends in enrollment into undergraduate engineering programs at Covenant University, Nigeria," *Data in Brief*, vol. 18, pp. 47-59, 2018/06/01/ 2018.
- [7] A. Ezenwoke, O. Ogunwale, O. Matiluko, E. Igbekele, S. Dare, O. Ezenwoke, *et al.*, "Academic performance data of undergraduate students' in 23 programmes from a private University in Nigeria," *Data in Brief*, vol. 20, pp. 57-73, 2018/10/01/ 2018.