

## **An Assessment of Scientific Research in Nigerian Universities**

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### **Abstract**

An analysis of higher education in Nigeria was made considering the past and presents situations in universities all over the country. The facts about commencement of higher education in the country was mentioned. The values between 2010 and 2017 were applied. The federal, state and private universities were considered. For the analysis, Scopus which is Elsevier's abstract and citation database launched in 2004 was used as a reference. Scopus is the largest abstract and citation database of peer-reviewed literature. Delivering a comprehensive overview of the world's research output in the fields of science, technology, medicine, social sciences, and arts and humanities, Scopus features smart tools to track, analyze and visualize research. The context of this article is analyzing the trends of academic publications in Nigerian Universities whether they are federal, state or private ones.

**Keywords:** Academic Publication, Higher Education, Funding, Nigeria.

### **1. Introduction**

Higher education in Nigeria started with the establishment of the Yaba College in 1932, while the first Nigerian university (the University of Ibadan) was established in 1948 (Abdulrahman, 2013). The Rivers State University of Science and Technology (RSUST) was established as the first state university in 1980 (RSUST, 2018). During the last two decades of 20th century and beginning of the 21st century, more state universities were established. With the promulgation of Decree 9 of 1993, opening of private Universities allowed in Nigeria. After this, many private universities have been issued licenses to operate in Nigeria (Yusuf, 2012). Thus, given almost a century of continuous research in our institutions of higher learning, one may ask: what has been the research output in these institutions both in terms of quantity and quality of research? This question is pertinent because there are presumptions of very weak research culture especially in the non-university sector. According to Ishengoma (2002) even in the university sector where several academics are known to have showcased the products of their research in the international intellectual scene, the bulk of this research is said to be conceived in terms of publications, career advancement and intellectual prestige of the individual researchers, often with very little social relevance.

On one hand universities in Nigeria increased in number, on the other hand industrialization was promoted under import substitution strategy. Both university development and industrialization progressed in the decades of 1960s and 1970s. Educational development and industrialization were both supported by the oil economy until the decline in the price of crude oil in the late 1970s. The deindustrialization that was glaring by mid 1980s and the crisis of decline in government support for the universities that began in late 1970s brought out the first set of indications that both the university system and the import substitution industrialization (ISI) strategy were very weak and unable to sustain economic growth of the 1960s and early 1970s (Yusuf, 2012).

## 2. Analysis of University Education in Nigeria

More bibliometric and scientometric studies are needed to measure African academics' contributions to global scholarly publications in a more objective way. Additionally, those statistics must be publicly open source and the methodology of the studies must be clearly explained. The context of this article is analyzing the trends of academic publications in Nigerian Universities whether they are federal, state or private ones. The output of this article will help university administrators in Nigeria to gain better understanding of the trends of academic publications in their respective universities. Beside this, the output of this article will also be used to drive a more informed policy formulation and implementation towards improving institutional academic research productivity. The complete examination of the trends of academic publications in Nigerian universities will help the National Universities Commission (NUC) in satisfying 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. The measurements 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. Moreover, free access to this information will help all stakeholders including postgraduate students, academics, university administrators, industry, and the Federal Ministry of Education to recognize universities with highest research capacities that can produce fruitful corporations and partnerships. Also, the data provided in this article may facilitate bibliometric and science metric studies on academic performance of the universities.

It is universally recognized that teaching, research and community service constitute the main functions of institutions of higher learning. For the purpose of this discourse, the latter comprise all institutions (whether state-owned or private) that offer courses or programs of study beyond secondary education. These include universities, polytechnics, monotechnics, colleges of technology, colleges of education etc., which shall be conveniently regrouped into two sectors namely, the university sector and the non-university or sub degree sector. According to the NUC there are currently 47 state, 43 federal, and 75 private universities in the country (NUC, 2018). Correspondingly, the total number of enrolment of students reach 1,962,364 in 2017 (NUSSD, 2017).

With regard to high level research in Nigeria there are, side-by-side with the institutions of higher learning, the professional and specialized institutions notably over 66 research institutes, which are under the auspices of parent federal ministries e.g. research institutes under the Federal Ministry of Science and Technology (FMST), those under the Federal Ministry of Health (FMH) or those under the Federal Ministry of Agriculture (FMA). The main distinctive feature of the research institutes is that they are professionally oriented to undertake specific or specialized research works/projects (Yusuf, 2012).

The National Policy on Education (NERDC, 2013), the National Policy on Science and Technology (NPST) (2012) and all subsequent related policy documents have placed emphasis on research as an integral part of Nigeria's national planning. The policy documents have also recognized the significant contribution that the two sectors of the higher education system could make in this regard, both as repositories of knowledge and, together with the research institutes, as the nation's leading research centers. It is obvious that the university sector, regarded as the pinnacle of the higher education system in Nigeria undertakes more research than the non-university sector, though, in the case of the conventional universities, their research works tend to be more academic (NPST, 2012).

Adebayo (2013) mentioned that the Federal Government commissioned a nationwide survey of the needs of the university system in 2012 and got the following results:

- i. that majority of the universities were grossly under-staffed; many laboratories and workshops were old with inappropriate furnishing;

- ii. classrooms/lecture rooms were overcrowded and overstretched; equipment and consumables were absent, inadequate or outdated;
- iii. kerosene stoves were being used as Bunsen burners in some laboratories;
- iv. engineering workshops were operating under zinc sheds and trees;
- v. and in many universities, science-based faculties were running 'dry lab' for lack of reagents and tools to conduct physical/real experiments

Beside them, Deji-Folutile and Oketola, (2014) also found that:

- i. where major equipment existed the ratio to student, in some universities, was as high as 1:500;
- ii. of the 701 physical development projects dotted across the universities in the country- 163 (23.3 per cent) were abandoned projects and 538 (76.7 per cent) were on-going projects;
- iii. there was rapid deterioration of hostel facilities, overcrowding and undue congestion in rooms, in addition to poor sanitation and overstretched lavatory and laundry facilities.

### **3. Research Funding Matters in Nigerian Universities**

In Nigeria, the conventional funding method for university research is formula funding based on inputs – staff size, enrolment etc. (Salami and Hauptman, 2006). The relevant supervisory bodies namely National Universities Commission (NUC), the National Board for Technical Education (NBTE) and the National Commission for Colleges of Education (NCCE) routinely fund the research in federal universities, polytechnics and colleges of education respectively. The federal institutions of higher learning are better funded and more autonomous than the state government owned institutions (Clark and Sedgwick, 2004). According to Akintoye (2008) given the expenditure dynamics of higher education research against scarce state resources in a deteriorating global economy, many countries around the world are now implementing the innovative, performance-based funding mechanism based among others on peer reviewed outputs or outcomes, rather than inputs. Ukeje (2002) and Onyeonoru (2007) noted that it is generally accepted that much needed human capital that will help transform this country guaranteed by only an efficient university education funding. In fact, there were years in which the amount received was slightly more than the amount requested. Thus, with adequate funding the universities were able to maintain international standard, as graduates from Nigerian universities were easily accepted in reputable universities abroad.

In addition, research projects funds are generally given in forms of sponsored research support, endowment funds, foreign aids, fellowships, donations by international and charitable organizations. Unfortunately, there is limited contribution of funding by industry in academic research in Nigeria (Donwa, 2006). Several academics such as Anyanwu and Iloeje (1996), Karani (1997), Ugwuonah and Omeje (1998), Okebukola and Solowu (2001), Okebukola (2002) and Chiemeke et al (2005) characterized the key and fundamental problem of Nigerian Public Universities is inadequacy of funding. All these problems occurred due to poor funding. Nigerian university system remains where it is today because of inadequate funding. One of the reasons why, there are limited number of foreign scholars in the system is because of the poor funding (Fagge, 2013). Okebukola (2002) indicated that the diminishing funding in the Nigerian Public Universities has led to poor condition of service, acute shortage of research and learning facilities for both staff and students, and depletion in academic staff strength through brain drain.

### **4. Comparison of research performance in Nigerian Universities**

Today, there are several different abstracting and citation databases of scientific and technical literature with different methodologies. In this article, Scopus abstracting/indexing database was

used to analyze the case. Scopus is the largest abstract and citation database of peer-reviewed literature: scientific journals, books and conference proceedings. Delivering a comprehensive overview of the world's research output in the fields of science, technology, medicine, social sciences, and arts and humanities, Scopus features smart tools to track, analyze and visualize research (Elsevier, 2018). Scopus contains one of 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) more than 150,000 books (d) approximately 70,000 main institutional profiles (e) 70 million items (f) 12 million author profiles and (g) 1.4 billion cited references dating back to 1970 (Scopus, 2017).

Scopus database was systematically queried to retrieve information about the research outputs of accredited universities in Nigeria. In 2017, 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. 32 out of 43 federal universities, 26 out of 47 state universities, and 9 out of 75 private universities were indexed in Scopus as institutional affiliations of Nigerian researchers.

Total number of 50,504 scholarly articles published by academic researchers in the identified 67 Nigerian universities over a period of 2010-2017 were collected from Scopus database. The data collected were accurately formatted in a Microsoft Excel Spreadsheet file for easy data presentation and analysis.

The number of research outputs published by federal, state, and private universities in Nigeria for 2010-2017 years are presented in Tables 4.1 to 4.4 correspondingly. Table 4.1 shows the trends of research publications in Nigerian federal universities. Table 4.2 shows the trends of research publications in Nigerian state universities. Table 4.3 shows the trends of research publications in Nigerian private universities. Figure 4.1 shows the trends of research publications in all type of Nigerian universities as ranked in Scopus abstracting/indexing database.

**Table 4.1** Academic publications by Federal Universities in Nigeria

2010	2011	2012	2013	2014	2015	2016	2017
4106	4906	4546	4457	4793	4751	5325	6787

**Table 4.2** Academic publications by State Universities in Nigeria

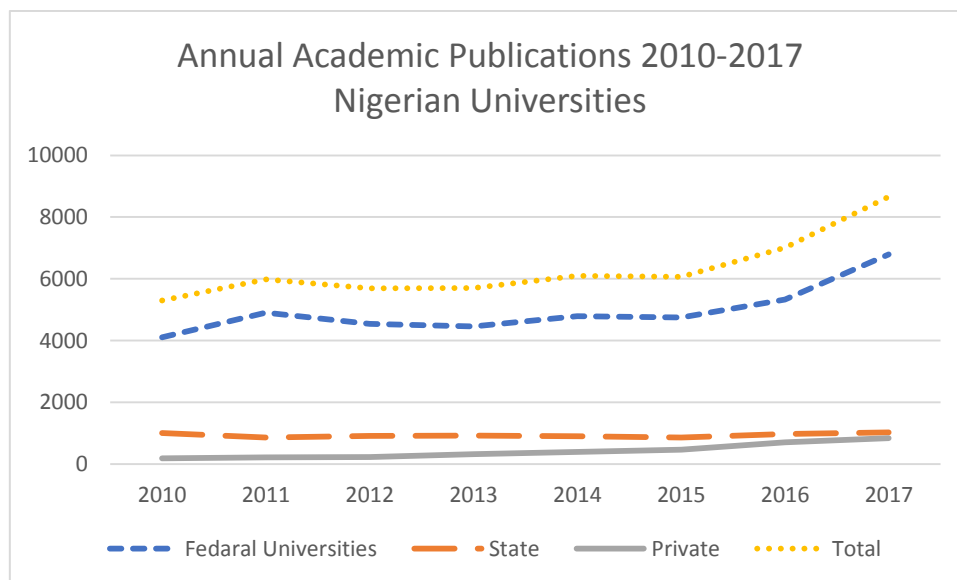
2010	2011	2012	2013	2014	2015	2016	2017
1002	859	915	921	905	856	979	1032

**Table 4.3** Academic publications by Private Universities in Nigeria

2010	2011	2012	2013	2014	2015	2016	2017
189	216	231	322	397	463	703	843

**Table 4.4** Academic publications by all Universities in Nigeria

2010	2011	2012	2013	2014	2015	2016	2017
5297	5981	5692	5700	6095	6070	7007	8662



**Figure 4.1.** Academic publications overview for different categories of Nigerian universities

Moreover, many believe that Nigeria’s institutions of higher learning are very much left behind in the area of research and innovation. In order to develop innovation in academic publications in country, standards of developed countries must be followed. As an example, in EU and OECD literature, innovation is described as: “transforming an idea into a marketable product or service, a new or improved production or distribution method or a new method of society service”. Innovation also means the new or improved product, service or method at the end of this transformation process (Can and Şağbanşua 2015). All the innovation leaders are ranked quite high above the EU average in terms of collaborative publications of public-private sector which indicates the relationship between the scientific base and companies. In overall, the developed countries in EU are ranked high in terms of their ratio of R&D expenditures in GDP (Can and Şağbanşua 2014).

Admittedly, poor motivation, poor and irregular funding, obsolete research infrastructure, inadequacy of qualified research personnel, general lack of research focus and poor linkage between researchers and the industrial sector are yawning gaps in Nigeria’s higher education research. These constraints constitute serious limitations to the research capacity and research capability of these institutions.

**5. Conclusion**

In this paper, it was seen that State and Private universities have stable academic publication numbers throughout the given period. But the Federal Universities have an increasing trend in other words developing in academic publication for the same period. The publication trend of total Nigerian Universities and the Federal Universities as parallel, this shows that the Federal universities are the engine of academic research in Nigeria. The private universities are closing the gap with state universities in number of academic publications during the research period.

In Nigeria, firstly Federal Universities and then State and then Private universities were founded that is parallel to academic performance of those university categories. It is expected that when those younger categories of universities mature, they will have a better performance.

Private and public funds must be increased to support academic researches like developed countries.

Finally, academic incentives must be developed to make research attractive among Nigerian society.

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