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Research Trend Vis-à-vis Sustainable Development Goals (SDGs) in Nigeria

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ABSTRACT While Nigeria is among the countries that subscribed to the adoption of the United Nations' (UN) Sustainable Development Goals (SDGs) in 2015, little is known about Nigeria's efforts and investment in research towards actualising these goals. The thrust of this study is to track the trend of SDGs research in Nigeria. The bibliometrics technique was adopted to analyse journal articles on the SDGs by Nigerian authors, using the SCOPUS database. The findings revealed a scant growth of research publications on SDGs, especially within the first two years of its adoption (2015-2017). However, in the third year, there was an exponential growth in research publication output, which grew marginally thereafter. This implies that the SDGs have not been internalised among the populace and are largely missing in scholarly debates and policy discourse. The study recommends that special funding should be allocated for SDGs related research projects to actualise the seventeen SDGs in Nigeria.

INTRODUCTION

Research and development are a major driving force behind many societal transformations globally (Dincer 2017; Cohen and Ilari 2020). Research activities enhance growth by contributing to the quality of life of people (Inglesi-Lotz and Pouris 2018). Studies have shown that both economic growth and research development complement each other (Odhiambo and Ntenga 2016; Zafar et al. 2019; Wang and Zhang 2020). Groundbreaking discoveries that originate from research activities bring significant commercial benefits to industrial firms; the skilled labour translates these discoveries into the production of goods and services for onward distribution to the citizenry who serve as the ultimate consumers, hence, improving the standard of living. Industrial firms annex new knowledge received from research to improve performance and to maximise profit. Also, governments at all levels and non-government organisations rely on research findings to formulate policies.

Igbinovia (2017) views scientific research as a proactive investigation aimed at solving essential problems in society. He stressed the significance of scientific investigation in unravelling each of the global goals. According to him, actualising SDGs needs a multifaceted approach that requires a cross-disciplinary type of research, which cuts across diverse specialities. This kind of intellectual synergy will broaden scientists' perspectives and propel them to engage in creative, analytical, and rational thinking for informed decision making and in finding solutions to challenges or problems afflicting humanity (Ocholla et al. 2016).

The United Nations General Assembly on September 25, 2015, adopted the Agenda 2030, also known as the Sustainable Development Goals (SDGs), as a call to action to protect the people, planet, and ensure prosperity (Olaniran 2018). The SDGs were developed to be a cohesively indivisible as three components of sustainable development: economic, social, and environmental, with the aim of "leaving no one behind" (Morton et al. 2017; Kostoska and Kocarev 2019). This implies that it involves all nations, and they need to meticulously interweave human development goals and environmental sustainability under a single global umbrella (Bowen et al. 2017). Each of the 17 goals has detailed values to be achieved, along with 169 targets put together to keep track of their performance and report the trends. Hence, nations are encouraged to drive the performance of the SDGs through economic, social, and cultural policies that are tailored to local settings within the confinement of the 2030 overall vision.

The inculcation of scientific research into SDGs should produce new collaboration between

the public and the private sector. Such partnerships between research and educational institutions go beyond technological development to the advent of knowledge that can enhance productiveness and international competitiveness among domestic firms (Fletcher et al. 2018).

However, actualising SDGs is an enormous task beyond the national governments and their public entities. An active contribution and participation of various stakeholders across every echelon of society is imperative towards attaining the long-term values of SDGs (Aliñska and Kosztowniak 2018). One such stakeholder is the scientists and the private sector who could engage in innovative research and create new knowledge that would promote the 2030 SDGs agenda and make informed policies at the national, regional, and international levels. The essence of this new knowledge is to proffer solutions to challenges or problems besetting humanity, which is the core of the global agenda to raise the lives of all and to transform our world for the better. Thus implying that interdisciplinary research among scientists, coupled with exhaustive industrial synergy, government regulations, organisations' policies, are the collaborative mainstay needed to drive the global agenda (Dell'Angelo et al. 2017).

Sustainable Development Goals (SDGs) are global developmental agenda of the people, by the people and for the people, that promise to leave no one behind because everyone is a stakeholder in implementing the goals, and a beneficiary of the huge gains envisaged to accrue from their actualisation. It is an historic action plan geared not only for the benefit of today's generation but also has the future generations in mind. The world leaders, at the inauguration of the Agenda 2030 SDGs, beckoned governments and public institutions, philanthropic organisations, volunteer groups, and the public to work closely to drive the historic agenda. Similarly, academia and the scientific community are to own and unpack the goals through research and innovations that will contribute to the overall Sustainable Development Goals. It would be ideal to determine how far the research community has taken up this challenge in the early phase of the programme to improve the pitfalls associated with the earlier MDGs agenda and thus contribute to actualising the SDG goals come 2030. This study seeks to explore the pattern of SDGs, using the Nigerian academic inquiry over a period five-year period (2015 - 2019) as a reference point.

Objectives of the Study

The thrust of this paper is to explore the extent to which sustainable development goals (SDGs) reflect in Nigeria's research output and to establish the research domain that has driven the 2030 agenda of sustainable development goals the most. Given the paucity of literature on SDGs research from a bibliometric perspective, this review aims to achieve the following objectives. To:

- explore the volume and trend of research on SDGs in Nigeria from 2015 to 2019,
- investigate the most researched SDGs in Nigeria, and
- examine the research domain that has featured SDGs the most.

The paper is expected to generate new knowledge and scholarship about the place of scientific research and innovation in driving development, especially in the context of the UN Agenda 2030 called the Sustainable Development Goals (UNDP 2019). Since research and innovation have implications for societal development, studies about how researchers contribute to achieving national and global development are vital. This review stimulates a better understanding of the need for the Nigerian government to prioritise research and innovation in her quest to achieve sustainable social and economic development.

Literature Review

All UN member nations adopted the Sustainable Development Goals (SDGs), also known as the Agenda 2030 in September 2015. There are seventeen SDGs and they were developed and adopted as a framework to achieve sustainable human and environmental development by the year 2030. According to Olaniran (2018: 12144), the seventeen goals are geared towards achieving the following by the year 2030:

i. Zero poverty
ii. Zero hunger
iii. Good health and wellbeing
iv. Quality education and lifelong learning
v. Gender equality
vi. Clean water and sanitation

vii. Affordable and clean energy
viii. Decent work and economic growth
ix. Industry, innovation, and infrastructure
x. Reduced inequalities
xi. Sustainable cities and communities
xii. Responsible consumption and production
xiii. Urgent action to combat climate change
xiv. Considerations for the life below water
xv. Protect life on land
xvi. Peace, justice, and strong institutions
xvii. Partnerships for the goals

Before the 2030 SDGs Agenda, the UN at the beginning of the millennium started the Millennium Development Goals (MDGs), an agenda of eight goals spread across 15 years; which largely was not met by Nigeria owing to her myriad of socio-economic and religious challenges (Olabode et al. 2014). Nigeria failed to meet the MDGs targets for many reasons (Oleribe and Taylor-Robinson 2016), which include the nonexistence of a valid national database that could collate, quantify and disseminate information, hence, calculations and projections were 'guesstimates'; a lack of scientific monitoring and evaluation of the programme's progress; incessant industrial strike action by healthcare professionals; weak guidance from the MDGs financiers, among others. However, Omisore et al. (2017), attributed the non-actualisation of the MDGs to the low-level of awareness and knowledge of the MDGs among the Nigerian populace. It is against this backdrop that UNESCO (2018) emphasised that sustainability begins at home and extends through urban and rural communities, and should be driven largely by the public (Aliñska and Kosztowniak 2018). Therefore, there is a need for collaboration between local authorities and leaders to annex communal learning opportunities through formal, non-formal, and informal means that will transform society, and enable people to develop knowledge, skills, and competencies needed to actualise the SDGs.

Reports emanating from the Sustainable Development Solution Network (2019) show that whereas goal 3 (good health and wellbeing), goal 9 (infrastructure), and goal 16 (peace, justice, and strong institutions) are facing major challenges, Africa is doing well in goals 12 (responsible consumption and production) and 13 (climate act). That notwithstanding, the goals that are facing challenges are critical, and therefore calls for comprehensive national information monitoring strategies, however the non-availability of data on SDGs indicators is not peculiar to African nations. According to UN Women (2018), there are methodological difficulties in monitoring gender-related indicators. For instance, at the global level, only ten out of 54 indicators are stable, while other nations' coverage for a further 25 indicators could not be ascertained. The consequences of severe data gaps could retard monitoring, evaluating, and reporting on the relevant goals and targets (AU, ECA, and ADB 2017). On this note, the post-2015 development agenda draws attention to the indivisibility of the goals and stress that no goal or target should be deemed met without adding value to all social and economic groups (United Nations Women 2017). This implies that none of the goals is sufficient on its own, but they are interwoven, and the success attained on one will affect the others and accelerate the gains of the entire goals of humanity.

Irrespective of these challenges, Nigeria, and in particular, African nations as members of the UN are committed to achieving these global goals, and are therefore taking steps to inculcate the SDGs into their national policies, budgets, public activities, and among the various tiers of government. Nigeria demonstrated her willingness to drive the success of the SDGs in several ways. For instance, in a bid to leave no one behind, Nigeria is the only West African country and one of only four in Africa that has a dedicated online repository or stand-alone website for the SDGs (SDGC and SDSN 2019). This platform affords the government to enlighten the public, provides current news, official speeches, metrics, and policies on the SDGs. Nigeria is among the 48 percent of nations that created national publicity to raise awareness of SDGs. Moreover, Botswana, Libya, and Nigeria are the only countries that update their SDGs website regularly (SDGC and SDSN 2019). Africa's SDG Index Ranking (2019) places Nigeria at the 43rd position in the continent with an index score of 47.0 and 52.6 regional average scores, respectively. Also, Nigeria is among the first African countries to formally recognise an open data system and embrace it to expedite economic growth and achieve Sustainable Development Goals (Akanbi 2016).

METHODOLOGY

This study adopted a quantitative research approach. The research design incorporated the

bibliometrics technique through content analysis. SCOPUS database was used to harvest publications on "Sustainable Development Goals (SDGs) emanating from institutions affiliated to Nigeria. The justification for considering SCOPUS is that, Scopus is the world's largest database for abstract and citation information (Okoroiwu et al. 2018:2); secondly, it is one of the most detailed and user-friendly databases (López-Muñoz et al. 2018:42,52). Furthermore, Scopus captures more scientific publications, books and conference proceedings (Ocholla et al. 2016:10) and indexes high impact factor journals (Suryani et al. 2013:85). A search window of five years from 2015 to December 2019 was considered because the SDGs 2030 Agenda was adopted in 2015 and became effective on January 1, 2016.

A search for 'Sustainable Development Goals and Nigeria' was conducted within titles, abstracts, and keywords because they are the core elements that summarise and represent the papers' contents. A total of 141 articles, reviews, and conference papers that mentioned SDG and Nigeria were found useful and analysed using Endnote, and Microsoft Excel spreadsheet. The results are presented in tables. Besides the above procedures, the researchers read through the abstracts and the entire articles to classify and link the contents to the respective goals.

RESULTS

RQ 1

The number of research outputs at the inception of the SDGs were six papers in 2015, and this increased slightly to eight documents in 2016. The meagre research output that kick-started the SDGs in the first two years was possibly because of several factors. SDGs came into to the limelight as a global course of action in the last quarter of the year, September 2015, and became effective from January 2016. However, there was a substantial increase in scientific enquiries into SDGs with 30 research publications in 2017; but there was a slight increase in the total number of publication outputs in 2018. Moreover, the number of research documents on SDGs in 2019 doubled that of the previous year with a growth rate of about 100 percent. From the foregoing, the trend shows a steady and progressive pattern of research output on SDGs since 2015. The highest number of research publications on Sustainable Development Goals (SDGs), 63 (44.7%), was produced in 2019, followed by 34 (24.1%) and 30 (21.3%) publications in 2018, and 2017 respectively; while 8 (5.6%) and 6 (4.3%) articles were featured in 2016 and 2015.

Table 1: Number of research outputs on Nigeria and the SDGs (2015 – 2019)

Year	*No. of outputs**	*%*
2019	63	44.7
2018	34	24.1
2017	30	21.3
2016	8	5.6
2015	6	4.3
Total	141	100

RQ2

Table 2 shows that Goal 3: "Good health and wellbeing" is the most researched SDG in Nigeria. This goal pulled 54 publications (38.3%) of the research output; followed by Goal 7 with 13 (9.2%) publications, while Goal 17 had 9 (6.4%) and Goal 11 had 8 (5.7%) publications, respectively. Goal 6 has 7 (5.0%) publications etc. On the other hand, a small numbers of research publications were observed under goals: 1 (No Poverty), 13 (Climate action), 8 (Descent work and economic growth), 9 (industry innovation and infrastructure) and 14 (Life below water). Goal 10 had the least, that is, 1 publication.

RQ 3

Examine the research domain that has featured SDGs the mostTable 3 highlights the research output based on the SDGs related research publications between year 2015 and 2019.

Results from Table 3 indicate that SDG 3 has the highest research output made up of 54 (38.3%) publications. Nevertheless, there seems to be a slight inconsistency in the volume of yearly publications. For instance, while there was a 20 percent increase in the number of publications in 2016; the rate of research turnover increased by 11 (68.75%) publications in the subsequent year 2017, an impressive research output that was more than three times higher than the previous year (2016) but remained the same in 2018. However, year 2019 witnessed a shortfall of 3 (-23.07%)

Table 2: Most researched SDGs

SDG goals	*No. of publications*	*Rank*	*%*
Goal 3 Good health	54	1	38.3
Goal 7 Affordable and clean energy	13	2	9.2
Goal 17 Partnerships for the goals	9	3	6.4
Goal 11 Sustainable cities and communities	8	4	5.7
Goal 6 Clean water and sanitation	7	5	5.0
Goal 2 Zero hunger	6	6	4.3
Goal 4 Quality education	6	6	4.3
Goal 16 Peace, justice, and strong institutions	6	6	4.3
Goal 5 Gender equality	5	9	3.5
Goal 8 Decent work and economic growth	5	9	3.5
Goal 9 Industry, innovation, and infrastructure	5	9	3.5
Goal 15 Life on land	5	9	3.5
Goal 1 No poverty	4	12	2.8
Goal 14 Life below water	3	13	2.1
Goal 12 Sustainable consumption and production	2	14	1.4
Goal 13 Climate action	2	14	1.4
Goal 10 Reduce inequality within and among countries	1	17	0.7

publications. This trend of irregularity has implications on the healthcare system of the nation's populace. Similarly, SDG 7- Affordable and clean energy followed, but not closely, as the second most researched SDG with 13 publications (9.2%). Goal 17 - Partnerships for the goals is the only SDG goal that demonstrated a growth of 33.3 percent and 40 percent in its research output for the years 2018 and 2019, respectively. Overall, the goal has 9 publications across the five years under review.

On the whole, research output on SDGs is on the increase every year. For instance, whereas there was a minimal increase of 25 percent in research publications in 2016, the following year 2017 witnessed over 70 percent increase in SDGs' related research in Nigeria. Year 2019 had the highest number of research publications totalling 63 publications that yielded a growth of 46 percent in comparison with 2018.

Table 4 lists the top 14 sources of journals wherein research findings on SDGs featured most for dissemination.

Information obtained from the SCOPUS database showed that Etude De La Population Africaine had nine research publications on SDGs denoting 20.9 percent of the documents; followed by seven (16.3%) documents from PLOS ONE Journal; while African Journal of Reproductive Health produced four (9.3%) scientific outputs. Library Philosophy and Practice has three publications, representing 7.0 percent. The remaining journals have two publications, which is 4.6 percent each. Goal number 3, that is, good health and wellbeing has the highest number of published documents (23). Therefore, it follows that health and the medical profession is the most featured domain whose research has bearing on SDG 3 - good health and wellbeing.

Table 3: Research outputs according to SDGs, 2015-2019

SDGs year	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*Total*
2019	2	5	13	4	3	5	4	3	4	1	3	-	1	2	4	4	5	63
2018	1	1	16	1	-	-	3	1	1	-	2	1	1	-	1	2	3	34
2017	1	-	16	1	2	2	3	1	-	-	2	1	-	-	-	-	1	30
2016	-	-	5	-	-	-	1	-	-	-	1	-	-	1	-	-	-	8
2015	-	-	4	-	-	-	2	-	-	-	-	-	-	-	-	-	-	6
Total	4	6	54	6	5	7	13	5	5	1	8	2	2	3	5	6	9	141
%			38.3				9.2				5.7						6.4	

Table 4: Top journal sources of research outputs on Nigeria and SDGs 2015 -2019

Source	*Number of outputs*	*% of journal publications*
Etude De La Population Africaine	9	20.9
PLOS ONE	7	16.3
African Journal of Reproductive Health	4	9.3
Library Philosophy and Practice	3	7.0
African Development Review	2	4.6
Annals of Global Health	2	4.6
BMC Health Services Research	2	4.6
Geo-Spatial Information Science	2	4.6
Global Public Health	2	4.6
IFLA Journal	2	4.6
Int Journal of Gynaecology and Obstetrics	2	4.6
Malaria Journal	2	4.6
Renewable and Sustainable Energy Review	2	4.6
Studies in Ethno Medicine	2	4.6
Total	43	100

DISCUSSION

This paper uses bibliometric techniques, using publication counts to verify the volume of research outputs that touch on the Sustainable Development Goals (SDGs) in Nigeria from the inception in 2015 to 2019. The importance of research for the growth and transformation of society cannot be over-emphasised (Cohen and Ilari 2020). According to Morton et al. (2017:82), the SDGs aims are to "end poverty, protect the planet and ensure that all people enjoy peace and prosperity, now and in the future". While practical actions for the goals are being promoted by the United Nations, examining the trend of research that informs the policy for the goals in a country like Nigeria is not out of place. The trend in research publications showed a growing pace since the Agenda 2030 was adopted as a global course of action. The volume of research at the onset was scanty and grew marginally in the second year. The low yield of research papers on SDGs at the beginning may be attributed to a lack of awareness and knowledge about the SDGs (Omisore et al. 2017). Moreover, it could be a deliberate waiting to allow the nation to imbibe the UN directive. Whichever way the pendulum swings, it contradicts the SDGs global slogan of "leaving no one behind," which suggests early sensitisation that would have culminated in a wider acceptance and everyone's participation in executing it. It is worth noting that Nigerians' low level of awareness and knowledge of global initiatives is not peculiar to the SDGs era; a similar attitude was shown towards the MDGs (Akinloye 2018). This lack of awareness contradicts target 12.8 of the SDGs, aimed at ensuring that people everywhere have the relevant information and awareness for sustainable development and peaceful co-existence with nature. Good societal awareness is not only imperative for the active participation of various stakeholders across the strata of the country, but also, it gives reason for the populace to demand public accountability, government adherence to global development plans, and to ensure national development (Amadi et al. 2017). However, evidence of a growing awareness of the SDGs emerged in the third year, that is 2017, with research outcomes that doubled from the previous years. Thereafter, a smaller number of research papers were added in 2018. However, in 2019, unlike the previous years, researchers demonstrated enthusiasm and undertook a great deal of scientific inquiry across all the goals except one, that is goal 12, which is - Sustainable Consumption and Production.

SDG Goal 3 "Good health and wellbeing" emerged as the most researched of all the SDGs. This finding indicates that health professionals in Nigeria are seizing the global agenda to disseminate medical research outcomes in national and international health-related journals. This is evidenced by the various document sources, which are quite significant compared to other SDGs. For instance, eight different journals featured in the source documents but Plos One and African Journal of Reproductive Health showed up seven and four times, respectively. Thus, giving credence to the fact that journals remain the most singular channel through which research is communicated, disseminated, and utilised (Ezema and Onyancha 2017).

A look at the publication's keywords, Table 2, reveals a divergent theme which proves that the SDGs are indivisible goals. Given that this goal not only has the highest number of targets but also bears at least ten other goals on health-related issues (World Health Organisation 2018). While World Health Statistics (2018) reveal that

Nigeria is faring well, as the seventh best performing African nation with a proportion of 43 percent births attended by skilled health personnel, a situation of over 100 deaths of new-borns and children under the age of five years, against the SDG global threshold of less than 70 per 100,000 live births, is disheartening. Meanwhile, less than 30 percent of Nigerian women of reproductive age (aged 15–49 years) have their family planning needs satisfied with modern methods. Therefore, improved medical care, and access to inclusive health services for all, as per the global agenda, is highly imperative.

Goal 7 followed, but not closely, as the second most researched SDG. However, goal 7 (affordable and clean energy), which falls within the purview of engineering disciplines, is the most practically oriented and more often than not, has extensive interaction with industries (Feldman and Desrochers 2003). The wider gap that exists between the most researched SDG 3 and other goals in this study should not be ignored, but it calls for concern because it invalidates the United Nations' pursuit and declaration to see goals and targets carried out across all countries and facets of society. This has consequences, and this discrepancy further corroborates earlier submissions that SDGs have not been given the deserved public coverage (Akinloye 2018; Amadi et al. 2017). Challenges are noticeable in SDGs 10, 12, 13, and 14 owing to low publication visibility.

The resultant effects of these findings are enormous, particularly in that ten of the SDGs are largely people-centred while all the goals are indivisibly interrelated. Hence, performing one goal may make or mar many other goals. For instance, SDG 7 has robust ties with some goals 1, 2, 3, 6, 8, and 13, and target 7.3's statement "by 2030, double the global rate of improvement in energy efficiency" advances eighteen other targets within the Agenda (SDGCA Report 2019).

Nigeria accounts for almost 25 percent of Africa's poor people (World Data Lab 2018). Consequently, if these goals are rightly pursued and annexed, it will eradicate poverty, end hunger, promote access to quality health delivery, provide access to clean water while minimising the effects of global climate warming.

CONCLUSION

The role of research in actualising Sustainable Development Goals (SDGs) cannot be overemphasised. Data analysis for this study shows that some significant insights have been gained into the volume of research publications that are available on the SDGs in Nigeria. The findings of the study suggest the need for government and other stakeholders in development to mobilise resources towards research and innovation, especially to aid the quick realisation of all the seventeen goals as highlighted in the development agenda.

Apart from Nigeria having the highest GDP in Africa, it is the most populous country on the continent, an thus a major stakeholder with regards to socio-economic development in Africa. Nigeria, therefore, cannot afford to be indifferent in actualising the Agenda 2030. At a generalised level, scholarly research works may provide a baseline for raising the awareness and commitment of people towards the Sustainable Development Goals (SDGs), and the possible strategies and techniques to promote it.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are suggested:

1. The establishment of a special fund by the Federal Government of Nigeria to promote SDGs-related research projects. This would go a long way in motivating academics and development practitioners towards birthing ideas and creating platforms for dialogues on various issues on the SDGs agenda. Such a fund could be introduced through the already established bodies like the Tertiary Education Trust Fund (TETFUND) and the Nigerian Education Research and Development Council (NERDC).
2. There is a need for the government to renew her partnerships and support for the institutions of higher learning in the country such as Universities, Polytechnics, Colleges of Education, Vocational and Technical Colleges to devote their research capacity towards developing ideas and innovations to respond to the 17 goals of the SDGs.
3. Private sectors should be actively involved in promoting research projects that are linked to the achievement of SDGs in the country. The government alone cannot drive the goals to fruition without the support of corporate organisations and private bodies.

Therefore, government at the Federal, State, and local levels must embrace external initiatives geared towards brightening the chances of actualising the SDGs.

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