INTRODUCTION

The quantitative thrust of any bibliometric analysis aimed at providing answers to physical properties of information couriers after rigorous research exercises. The result can be used to substantiate the contributions of such couriers to new and existing knowledge. It usually leverage on measurable descriptive parameters with non-comparative impact and provide volume of research output that may not be limited to information dissemination media, geographical distribution of research output and yearly distribution of research output (Balasubramanian & Baladhandayutham, 2011). The descriptive parameters according to Kasa (2019) help researchers to understand the implications of research productivity in terms of volume, spread and transmitting media. The choice of quantitative thrust in the context of this paper is synonymous with finding through counting the “research performance in institutions” using assigned mandate as standard for measurement. The simplicity of the work through bibliometric analysis nevertheless contributes empirically by providing clearer and leading results that can be aggregated. The aggregated findings can serve as data point for the synthesis of factors influencing research output performance (single researcher, group of researchers, or institutions). Of significance is that such studies that employ bibliometric analysis shed insight on published research output descriptively.

Assessing research output has been acknowledged by numerous write-ups (Henrekson & Waldenstrom, 2010, Kweik, 2018, Piro, Aksnes & Rørstad, 2013) and there is no gainsaying that it will stop soon because research output plays significant roles in development and for advancement of the society. Research output particularly those emanating from universities according to UNESCO (2014) is reliable sources of information because universities possess the requisite engine rooms that brings about end to extreme poverty, ensure development of human capital and provide the links that support collaboration, collaborating networks, as well as provide answers to problems beyond intelligence. Accordingly, Chukwuemeka, Oji, Okafor,
agricultural and natural resources, respond to broad agriculture ecological catchment zones and the zones respective farming systems. In addition, the institutes operate within structured research programmes (Ado, 2006, IAR & T, 2018). NAPRI is saddled with the genetic improvement of livestock and livestock systems in structured research programmes (Ahmadu Bello University Management Information System (ABUMIS), 2018). However, NAERLS is responsible for the development, collation, evaluation, dissemination of agricultural technologies, conduct research in agricultural extension methodologies and policy, and provide leadership in capacity building of stakeholders to meet the present and future agricultural developmental challenges of Nigeria (NAERLS, 2011). These institutions are to collaborate with experts in multinational agricultural research institutions and the private sector to improve agricultural research and development through initiated researches by their institutes, and third parties.

Research Objectives
1. Find out research disseminating media prevalent among universities
2. Determine the geographical distribution of research output
3. Find out the yearly spread of research output

Literature Review

Information dissemination media among university-based agricultural institutions

The instrumentality of research output as a measure of research depends on what is shared, accessed, available and retrieved. These are nurture of information dissemination media that could be tied to audience as target. By way of concept, information dissemination media are couriers used for the spreading of information, knowledge and opinion of others (Zhang et al., 2014). According to these authors, information dissemination media possess important qualities that make them unique and the roles they play particularly of ensuring that there is reduction of loss of whatever types due to dearth of information and ensure safety of human beings due to making the right decisions.

Depending on the information media, information disseminated follow certain patterns that describes the medium as a tool and physical information courier. For formal academic and research purposes, information dissemination media are increasingly expanding by types, audience, structure and format (Kasa, Danbaki & Atte, 2018). The incorporation and use of information and communication technologies and different supporting platforms also made substantial contributions (Kaplan & Haenlein, 2010, Macilwain, 2013). Emphasis on traditional media was made by Zhang et al. (2014) as playing important roles in information dissemination. These traditional media include print books, journals, conference proceedings, and seminar papers. With the electronic platforms overwhelmingly wide net-worth coverage at low cost and effective expanded the dissemination media such as the use of the electronic counterparts of the print-based resources such as e-books, e-journals, e-conference, and e-seminars. According to Uchida, Takahata, Shibata and Shiratori (2011) there is some level of complementarity among the

and Onwuechekwa (2014) declared that universities are marked apart because they are essential to research activities, universities provide implementable and systematic procedures that can factor all decisions made as much as possible to be based on empirical, replicable and verifiable facts. This implies that research is key and research output the windows to opportunities. According to Ugwuona and Dike (2015) the benefits of research lie not only in its capacity to generate new knowledge, but also in the potential to translate such knowledge into solving problems and distinguishing all its associates.

University-based agricultural research institutes are formal institutions established by statutes that affiliated them to a federal government owned university in Nigeria. These institutions are categorised into specialised units, programmes and departments to help, receive, process, coordinate and constitute research teams. The teams are to resolve agricultural problems prescribed by the assigned national mandate. These institutions are unique and found in Nigeria in the entire continent of Africa. The university-based agricultural research institutions are required to collaborate with ministries of agriculture in federal, state and local government councils of the country, faculties and departments of agriculture, and other allied fields in other universities, industries, international agencies and institutions around the world.

Descriptive parameters selected for this paper is aimed at bridging the informal sectors with information generated over a period of time by the institutions. Because it is perceived that the result can influence decision making and help agricultural stakeholders in Nigeria to accomplish their goals it has become of pertinence. Notwithstanding that the institutes can see their efforts at both statutory national mandates and what their response have done to alleviate the plight of the informal stakeholders. The informal stakeholders comprise farmers, marketers, processors, and transporters that are found outside the institutions but depending directly or indirectly on the institutional suggestions and recommendations to federal government on social, economic and political stability. Worthy of note is that papers such as this can espouse the informal sectors to seek knowledge from the documents used for the dissemination of research output, and at the same time ensured that research institutions institute a response desk to standardise their operations.

Background of the institutions

The institutions that became the university-based agricultural research institutions in Nigeria comprise Institute for Agricultural Research (IAR), Samaru; Institute of Agricultural Research and Training (IAR&T), Ile-Ife; National Animal Production Research Institute (NAPRI), Shika and National Agricultural Extension and Research Liaison Services (NAERLS), Samaru (Abalu, 2001). To further boost agricultural production these institutes were assigned specific mandates in 1987 by federal government of Nigeria to ensure that they go beyond the traditional service of extending research-based knowledge to farmers (Adepoju, 2008).

The IAR and IAR & T are the two of the university-based agricultural research institutions saddled with genetic improvement of crops and to cooperate with ministries of
traditional and electronic information dissemination media particularly when the use of the e-types fail or paralysed due to faults, the print-types becomes most reliable. This implied that information dissemination media possess different characteristics that make them unique for the improvement of communication, knowledge and the expended efforts. These media influence future research outcomes and the large amount of information added to the knowledge base of academia with the aim of improving and influencing decision within a fixed time period, space and medium. This takes cognisance of the dynamics in the field and help address the challenges of results due to ambiguity of period, space and medium.

**Geographical spread of research output of faculty members**

Understanding the spread of research output helps to reveal the domestic and internationalisation efforts of researchers (Kweik, 2018). Researchers who vent into the internationalisation arena are called elite scientist (Yin &Zhi, 2017). Geographical spread of research output of faculty members is a conformist thrust of globalisation and an indicator that a faculty member of groups of faculty members are confidence, ready and willing to present their research efforts to be critiqued by others in different regions and having different background. Investigating geographical spread of research output can help to reveal the dichotomy of domestic as well as international spread of research which is a pertinent measure of research visibility.

Geographical spread inclusion as a parameter for the assessment of research output in bibliometric studies according to Moyon and Shukla (2017) makes bibliometric analysis situate able. In specific terms can draw inferences using records generated from regions, states, nations, and continents. The indicator can suggest geographical areas needing immediate interventions based on the records of their research output performance (Unutmaz&Kocabey, 2017, WHO, 2016).

**Yearly spread pattern of research output**

Yearly spread of research output is a distribution pattern used in bibliometric studies to examine the growth of literature annually (Udo-Anyanwu, 2018). Jayachitra, Senti and Rajaram (2017) opined that yearly distribution of research output is a performance index that distinguishes productivity. Using yearly spread, researchers can collate productivity figures in terms of publication types, individual and groups annual performance, and institutional annual performance. According to Hadagali and Anandhalli (2016) using yearly spread for research output assessment can show yearly increase and decrease pattern. Yearly spread as a parameter of bibliometric studies has been used to investigate commercial index such as Scopus database to report growth of indexed publications and make inferences (Sivakumar, 2018).

**Theoretical frame Work**

The significance of research output has made numerous authors to work on research productivity. Those for works that leveraged on bibliometric analysis were conformist of the classical bibliometric theories (Lotka’s law of scientific productivity, Bradford’s law of scatter, Zipf’s law of word occurrence) (Tsay& Yang, 2005). According to Phillips and Maes (2012), bibliometric analysis is optimally used to complement evaluation of research output, and not to replace other research assessments measures, and University of Waterloo Working Group on Bibliometrics (UWWGB), (2016) justified the earlier claim by empirically showing that there is varied methodological reliability approaches to bibliometric measures when other parameters are used in the place of the classical theories. The ABC model of research productivity propounded by Aithal and Kumar in 2016 was adopted. It is acronym for advantages, benefits and constraints (ABC), and used to measure research productivity in higher educational institutions (Aithal& Kumar, 2016).

The choice of the model is however of two folds, one because it promote the construct of the classical bibliometric law of research productivity by Lotka. The second reason is that ABC model of research productivity promotes accountability principles. These principles facilitate the understanding of bibliometric analysis by non-specialists and aid measuring of scientific publications contributed by researchers and institutions without gross systemic errors. The model supplies the procedure for quantifying media used for dissemination of research output, yearly distribution, and geographical spread of research output. In addition, the deviation from the classical theories in peculiar studies such as this is encouraged by Pilkington and Pretorius (2015), as measures to facilitate the understanding of determinant issues affecting a system, particularly, research productivity from the perspectives of pseudo-quality and intangible measurements.

The ABC model is a meta-model that originated from Accountability Theory (Aithal& Kumar, 2016a, 2016b). The accountability theory was propounded by Tetlock, P. E, Lerner, U. S., and colleagues (Tetlock developed the initial concepts and mechanisms on accountability through several key papers; Lerner later worked with Tetlock in 1999 to develop what is largely referred to as accountability theory (Lerner &Tetlock, 1999).The ABC model states that “research output can be measured by converting intangible estimates to tangible scale” (Aithal& Kumar, 2017, p. 42). The ABC model use systematic matrix (Aithal& Kumar, 2016; Aithal, Shailashree& Kumar, 2016) to obtain a table of index which helps to rank research productivity on an annual research index scale. The matrix considers the factors that contribute to the success of creating new knowledge and prioritized them using a scoring pattern.

The research index is computed following a standardised procedure for a specified period, scoped by boundaries such as location and fields. In terms of location, it is focused on six postulates (Aithal& Kumar, 2016; Aithal, Shailashree& Kumar, 2016): Postulate 1: The quality of higher education depends on the ability of the institution to create new knowledge; Postulate 2: The ability of new knowledge creation of institution depends on the institutional research and publications by its faculty members; Postulate 3: The institutional publication is measured by calculating its annual average publications; Postulate 4: The institutional publication ability is measured by its annual publications; Postulate 5: The Research productivity (P) of the institution can be measured by knowing research index (α) and weighted research index (β), which shall be calculated using average publications in Journals, average publications of books and an average number of publications, and Postulate 6: The annual research productivity (research index α) of the organization decides institutional ranking. These postulates are emphasised by this paper accordingly.
How the research index works

The research index per year ($\alpha$) is calculated using the formula $\alpha = (2A + 5B + C)/F$, and the weighted research index (β), per year, is calculated using the formula $\beta = (2A + 5B + C)/8F$, where $A$ = No. of publications in Journals in that year, $B$ = No. books published in that year, $C$ = No. of Publications in that year, and $F$ = No. of full-time Faculty members in that institution during that year. The weightage for a research article $A$ is two and that of book $B$ is five and the case study is one, based on a quantified assumption of the relative significance & efforts involved in generating a quantifiable figure through a summated scaling technique. To calculate research index for say university = $(2A + 5B + 1C) / F$, where $A$ is number of papers published in reviewed and indexed Journals with ISSN number during a given year, $B$ is number of books published with ISBN number during a given year, and $C$ is sum of number of book chapters published during a given year. $F$ is the number of faculty members evaluated per institution during a given year.

Institutional Research productivity index = $[(2A + 5B + 1C) / F] \ldots (1)$

The weighted average is an average in which each quantity to be averaged is assigned a weight age. These weight ages determine the relative importance of each quantity on the average. Weighted Research productivity index of the university are calculated using following formula:

Weighted Research Productivity index = $[(2A + 5B + 1C)/8] / F \ldots (2)$

Where $A$ is the number of papers published in reviewed & indexed Journals with ISSN during a given year, $B$ is the number of books published with ISBN during a given year, and $C$ is the sum of the number of business cases and book chapters published during a given year. $F$ is number of faculty members evaluated during a given year (Aithal, 2016a, 2016b). Irrespective of the number of published journals, books, chapters in books, seminars, and edited conference proceedings, among other research output, and the number of faculty members involved and/or considered for research output performance during a given year, annual research index obtained, annual weighted research index obtained, and annual/average grade that is assignable (this calculations by Aithal, Shailashree and Kumar, 2016 is summarised) as presented in Table 1.

Table 1 Annual performance indicator chart based on expected annual research index

<table>
<thead>
<tr>
<th>Annual research index</th>
<th>Annual weighted research index</th>
<th>Faculty member annual/average grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 and above</td>
<td>3.60 and above</td>
<td>Super research performer</td>
</tr>
<tr>
<td>16-24</td>
<td>2.0 – 3.0</td>
<td>Optimum research performer</td>
</tr>
<tr>
<td>8-16</td>
<td>1.0 – 2.0</td>
<td>Best research performer</td>
</tr>
<tr>
<td>4-8</td>
<td>0.5 – 1.0</td>
<td>Better research performer</td>
</tr>
<tr>
<td>3-4</td>
<td>0.375 – 0.5</td>
<td>Good research performer</td>
</tr>
<tr>
<td>2-3</td>
<td>0.25 – 0.375</td>
<td>Satisfactory research performer</td>
</tr>
<tr>
<td>1-2</td>
<td>0.125 – 0.25</td>
<td>Poor research performer</td>
</tr>
<tr>
<td>0-1</td>
<td>0 – 0.125</td>
<td>Non-performer</td>
</tr>
</tbody>
</table>

Source: Aithal, Shailashree and Kumar (2016)

METHODOLOGY

The quantitative parameters used for bibliometric analysis of research output are numerous. In this paper, the descriptive parameters were purposively selected to assess the research output of faculty members in university-based agricultural research institutions in Nigeria using the ABC model as framework. The model facilitated analysis and making inference of research output performance of faculty members and their respective institute. Ex post facto research design was adopted to explore these variables that were not manipulated. The instrument for data collection was the certified and verified bound copies of research output by the appointments and promotions committees in the institutes. The population of the study was 79, but a total of 33 constituted the sample size because they fell within the study scope and eligible for the study. Stratified random sampling technique was used to draw respondents without bias, and using 61% response of eligible subjects, a proportionate new sample size was drawn for each institute. Data collection commenced after securing clearance certificate from Babcock University Health and Research Ethics Committee (BUHREC). This was granted after ensuring that the study has no conflict of interest and its consent form administered to respondents guaranteed that data collected is strictly for academic purpose, and anonymity of the respondents is assured. Data analysis was descriptive.

RESULTS/FINDINGS

Research Question 1: What constitutes information dissemination media for research output among faculty members in university-based agricultural research institutions in Nigeria?

Research question one is guided by the types of media used by faculty members for the dissemination of research output.

Table 2 Research output information dissemination media

<table>
<thead>
<tr>
<th>Transmission media</th>
<th>Institutions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journal</td>
<td>IAR</td>
<td>212</td>
</tr>
<tr>
<td>Books</td>
<td>IAR&amp;T</td>
<td>126</td>
</tr>
<tr>
<td>NAERLS</td>
<td>76</td>
<td>497</td>
</tr>
<tr>
<td>NAPRI</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>Chapter in books</td>
<td>IAR</td>
<td>4</td>
</tr>
<tr>
<td>Seminar papers</td>
<td>IAR&amp;T</td>
<td>3</td>
</tr>
<tr>
<td>NAERLS</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Conference proceedings (edited)</td>
<td>IAR &amp; IAR&amp;T</td>
<td>101</td>
</tr>
<tr>
<td>Technical report</td>
<td>IAR</td>
<td>53</td>
</tr>
<tr>
<td>Miscellaneous (newspaper, extension bulletins, posters presentations)</td>
<td>IAR</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>523</td>
<td>184</td>
</tr>
<tr>
<td></td>
<td>142</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td>981</td>
<td></td>
</tr>
</tbody>
</table>

Source: Field survey, 2019

Key: IAR – Institute for Agricultural Research; IAR&T Institute of Agricultural Research & Training; NAERLS-National Agricultural Extension & Research Liaison Services; NAPRI – National Animal Production Research Institute

Table 2 reveals the findings of the study. A total of seven media were used for the dissemination of research output. The mediums comprised of journals, books, chapters in books, seminar papers, papers in edited conference proceedings, technical reports and miscellaneous papers which consist of published/presented articles in newspapers, extension bulletins, and posters. The distributions according to the institutes studied are as follows: IAR (523), IAR&T (184), NAERLS (142) and
NAPRI (132), respectively. As expected, journals were the media mostly used for the dissemination of research output by faculty members with a total of 497 articles published, conference proceedings (edited) followed with 184 edited papers, seminar papers presented were 169, and the least were chapters in books with only 12 publications. Among the institutions, IAR had more journals (212), chapters in book (7), seminar papers (129), Conference proceedings (edited) (101), Technical reports (53), and Miscellaneous (newspaper, extension bulletins, poster presentations) (17), and the NAERLS had the most number of published approved books (5). This implies that there is some sort of order of preference. The order of preference influences the choice of medium used for research output publication. The result shows consistency with the number of journal articles published among faculty members in all the institutions studied. Therefore, it seems that the order of ranking of faculty members and institution according to information dissemination of research output encourage the utilisation of journals when compared with the statistics of other media.

![Research output transmission and dissemination media approved for faculty members](image)

Figure 1 shows the distribution of the respective contributions of the media used for the dissemination of research output in percentages in the four university-based agricultural research institutions in Nigeria. Chapters in books and books conveyed the least research output with a contribution of only 1% each throughout the decade studied. The overall assessment shows that journals contributed 41%, seminar papers 25%, conference proceedings (edited) 19%, technical reports 10%, and miscellaneous 3% in this order respectively.

**Research Question 2:** What is the geographical spread of research output of faculty members in the university-based agricultural institutions in Nigeria?

Research question two investigated the spread of published/presented research output of faculty members across five continents. Specifically it looked at the number of articles each institution contributed in a decade (2009 – 2018). Answer to the research question is given in Table 3.

<table>
<thead>
<tr>
<th>Institution</th>
<th>Geographical location</th>
<th>Africa</th>
<th>Asia</th>
<th>Europe</th>
<th>North America</th>
<th>South America</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAR</td>
<td>239</td>
<td>62</td>
<td>87</td>
<td>34</td>
<td>31</td>
<td>31</td>
<td>523</td>
</tr>
<tr>
<td>IAR&amp;T</td>
<td>58</td>
<td>19</td>
<td>47</td>
<td>49</td>
<td>11</td>
<td>184</td>
<td></td>
</tr>
<tr>
<td>NAERLS</td>
<td>64</td>
<td>27</td>
<td>25</td>
<td>26</td>
<td>-</td>
<td>142</td>
<td></td>
</tr>
<tr>
<td>NAPRI</td>
<td>83</td>
<td>17</td>
<td>22</td>
<td>22</td>
<td>3</td>
<td>132</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>464</td>
<td>125</td>
<td>181</td>
<td>166</td>
<td>45</td>
<td>981</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Field survey, 2019

**Key:** IAR – Institute for Agricultural Research; IAR&T- Institute of Agricultural Research & Training; NAERLS-National Agricultural Extension & Research Liaison Services; NAPRI – National Animal Production Research Institute

Geographical spread of publications/presentations by faculty members affiliated with university-based agricultural research institutions in Nigeria is given in Table 3. The spread is found across Africa, Asia, Europe, North America and South American countries. Findings revealed that scholars in university-based agricultural research institutions in Nigeria published/presented articles mostly domiciled in Africa. These accounted for over 47.3% of the total articles spread across the globe. This was followed very distantly by Europe (181) which represents 18.5% of the articles and in North America (166) which stood at 17%. However, it was relatively low in South America (45) or a mere 4.6%, respectively. In comparing the four institutions, IAR (523) and IAR&T (184) followed each other chronologically by volume of total publications/presentations. The least is NAPRI with 132 publications/presentations across the geographical spread, respectively. NAERLS is the only institution in Nigeria that did not record a single publication/presentation in South America during the period under assessment.

Postulate 6 of the ABC model of research productivity used in this study which states that “… research productivity of an organisation decides institutional ranking” can help this study made deductions such as those enumerated above. In specific terms that publications/presentations are disseminated media domicile in Africa than other geographical locations, ranking Africa the 1st point of faculty members belonging to university-based agricultural research institutions in Nigeria, the 2nd position is occupied by Europe, the 3rd by North America, Asia is on the 4th and the 5th by South America. This finding show unequal geographical spread when the four institutions are compared, this suggests that the inter-institutional collaborations needs to be strengthen through formal linkages across the globe while encouraging faculty members to publish/present their scholarship with incentives such as allowances and recognition of researches that are globally visible and accessible.

**Research Question 3:** What is the yearly spread pattern of research output of faculty members in the university-based agricultural research institutions in Nigeria?

Research question 3 identified the yearly distribution of published/presented research output starting with 2009 through to 2018. The volume of research output for each of the institute was collated for each year and recorded accordingly. Specifically, what cumulated as yearly productivity, institutional general standing after the study period was...
ascertained and the entire performance of the four institutions determined.

Table 4 Yearly spread of research output in university-based agricultural research institutions in Nigeria

<table>
<thead>
<tr>
<th>Year</th>
<th>Institutions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IAR</td>
<td>IAR&amp;T</td>
</tr>
<tr>
<td>2009</td>
<td>67</td>
<td>27</td>
</tr>
<tr>
<td>2010</td>
<td>26</td>
<td>35</td>
</tr>
<tr>
<td>2011</td>
<td>81</td>
<td>37</td>
</tr>
<tr>
<td>2012</td>
<td>87</td>
<td>13</td>
</tr>
<tr>
<td>2013</td>
<td>65</td>
<td>16</td>
</tr>
<tr>
<td>2014</td>
<td>58</td>
<td>17</td>
</tr>
<tr>
<td>2015</td>
<td>59</td>
<td>14</td>
</tr>
<tr>
<td>2016</td>
<td>50</td>
<td>11</td>
</tr>
<tr>
<td>2017</td>
<td>30</td>
<td>14</td>
</tr>
<tr>
<td>2018</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>523</td>
<td>184</td>
</tr>
</tbody>
</table>

Source: Field survey, 2019

Key: IAR – Institute for Agricultural Research; IAR&T – Institute of Agricultural Research & Training; NAERLS – National Agricultural Extension & Research Liaison Services; NAPRI – National Animal Production Research Institute

Figure 2 shows the harmonic patterns of the yearly spread of research output (2009-2018)

In conclusion, the use of descriptive parameters to assess research output is desirable to rid dearth of basic quantitative information that can influence agricultural research performance, points to core media facilitating the dissemination of research output, and preferred geographic location as well as what transpired through the yearly (periodic) research output distributions.
Recommendations

Acknowledging the three descriptive parameters could contribute information that can be transformed to knowledge that improves agricultural development. The following recommendations are advance to support decisions at the operational, tactical and strategic levels in line with the answers obtained for the research questions from the university-based agricultural research institutions in Nigeria:

1. What could inform faculty members to disseminate research findings in nay medium is dependent on many factors, the ones that are considered for their promotions as most prioritised. Journal dominated and to our mind it was not unexpected because it is the major medium considered for faculty member’s promotion. It is recommended that other media be ranked where they lag behind, in this case, books, chapters in books and miscellaneous collections.

2. While Africa is dominating in the geographical deposits of research output, the quest for globalisation and the visibility of expended research efforts of faculty members, consultant and institutions. Faculty members must be encouraged to explore other geographical areas particularly Asia and South America to be able to take advantage of collaboration.

3. Factoring research output via understanding yearly distribution help to break down the predictors influencing publications/presentation of research output and propose measures that can sustain high productivity.

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