

**PUBLICATION IMPACT OF ACADEMIC STAFF IN SOUTH-EAST NIGERIAN  
UNIVERSITIES: A STUDY OF THEIR H-INDEX VALUE USING GOOGLE SCHOLAR  
AND SCOPUS**

**BY**

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**Abstract**

**Purpose:** *This study was carried out to investigate the impact of publications by academic staff in South East Nigerian Universities.*

**Design/Methodology/Approach:** *The study adopted a descriptive survey research design and the study area was South East Nigeria. The population of the study consisted of 2589 academics from four Universities. Multi-stage sampling technique were used to select three hundred and thirty-seven academic staff (337) that formed the respondents for the study. The instrument for data collection included a combination of questionnaire (collect demographic data of the academic staff), Scopus and Google Scholar database. Out of the 337 copies of questionnaire distributed, 274 (81%) copies were properly filled found useful for the study.*

**Findings:** *The study revealed that a number of international publications and H-index were recorded for academic staff in South East universities in Google Scholar and SCOPUS. However, the impact (H-Index) of these pu blications in international scene is low.*

**Implication:** *South East Universities management should encourage academic staff to publish quality papers that will receive high h-index by providing research grants, sponsoring and giving incentives to academic staff that publish in internationally reputable journals. This will enhance the university visibility, reputation and rank.*

**Originality/Value:** *The study recommended that academic staff in South East Nigerian Universities should improve the quality of their publication to increase citation and impact.*

**Keywords:** *International Publication, Research Output, H-Index, Academic Staff, South East*

**Introduction**

Academic staff research publications in recent years have become significantly an important element among institutions of higher learning. It is one of the major criteria to measure an institutions' quality, status, educational excellence, contributions and recognition. As universities are striving for recognition, strategic plans and task are carried out to enhance the standard and quantity of publication outputs.

Some institutions organise seminars or trainings for their academic staff with the view of improving their research capabilities and increase the opportunity to

publish in impact factor journals/international referred journals. Apart from training and seminars, some institution go as far as giving incentives and recognitions to staff with high research output particularly to those that published in high impact factor journals. Some institutions place a high value on the relationship between research productivity and rewards by offering pay raises, tenure, and promotion.

Africa continent has been described as an area that is categorized with low research productivity, notwithstanding measures taken by institutions to improve research. Mouton (2010) observed that

declining shares of African science in general is not a sign of a total decline, but a relative growth in publication output less than the global growth rate. Though it has been on record that African universities are lagging behind their counterparts in the world ranking, yet some African countries like South Africa during the period of 2012-2015 ranking were listed among the best universities in the world (Times Higher Education, 2012, 2013, 2014 and 2015). Throughout this years, universities in South Africa have been on the top among universities in Africa. Tijssen (2007) pointed out that the dominance of South African in research in sub-Saharan Africa was as a result of the established ways of incentivising staff by giving monetary rewards to those that publish in credible journals. The monetary rewards for publication increased significantly from approximately \$9000 in 2005 to nearly \$12000 in 2009. The increase in unit rewards had a major impact on research output in South Africa.

The incessant poor ranking of Nigerian universities even within African continent is raising a lot of concern among Nigerian scholars. Yusuf (2012); Nduka and Falayojo (1985) argued that the situation was not bad during the 1960s to the mid-1980s which was described as the period of “research boom”. During the period, volumes of journals and textbooks were published by Nigerians as such became widely known for their research productivity. Bako (2005) affirmed that World Bank, National University Commission, The Academic Staff Union of Universities unanimously agreed that in terms of quantity of research of tertiary institutions, Nigeria was the best and leading in sub-Saharan Africa during the period of research boom. Decline of research in Nigeria universities presumably, started systematically from late 1980s. For example, the total number of scientific publications from Nigeria in 1981 was 1062, but this number came down

to 711 by 1995 (Yusuf, 2012; Saint et al., 2003).

Poor ranking of African countries particularly Nigeria is a worrisome situation that one may be tempted to ask ‘are research papers published by African researchers’ insignificant or their publications not visible to international community to be included in world ranking?’ Scientific America report on research in developing nations of the world addressed the issue, making reference to the substantial volume of research carried in developing countries that is virtually invisible to the international scientific community. Observably, most researchers in Nigeria publish their research findings mainly in national and local journals, owing to the fact that some academics lost interest in publishing in international journals in the past because many of their submissions are turned down by most peer-review international journals. Galina Russel cited in Okafor (2011) found out that in developing countries the problem of impact analysis using citation is complicated by the fact that applied research of a local nature is rarely cited even when published in the mainstream journals. In a related study by Jacob cited in Okafor (2008) tried to search through the Science Citation Index (SCI) to study publication pattern of South African scientists it was challenging and frustrating because the majority of South African articles published were not referenced. in the SCI. While emphasizing the need for global visibility of Nigerian scholarly publications, Ezema (2011) opined that the ability to devise appropriate methods of disseminating research findings for wider exposure is the major issue facing research publication in Nigeria. He emphasized that most research findings are published in journals with very limited exposure. Some research findings are read only by journal reviewers and authors. Consequently, some universities in Nigeria engaged their academic staff to register in Google Scholar and Research Gates platform to upload their

research articles for visibility, recognition and citation.

Elements usually used in measuring research publications impact as highlighted by Lerttuarak, (2008) are quantity of professional journals and conference publications, citation impact, writing a book or chapter, among others. Generally, publication of an article in a referred journal is considered by scholars as the most important element of academic research productivity. In the past number of publications and journal impact factors were used to determine research impact (Ale Ebrahim, Salehi, Embi, Habibi, Tanha, Gholizadeh, and Motahar, 2014). Recently, citations per article according to (Orji and Anunobi, 2019) is the major determinant of scientific impact. Watkins, and Chan-Park, (2015) maintain that h index has become one of the most popular means of determining research quality because it combines an indicator of quantity (publications) and an indicator of quality (citations) into a single metric.

Although academics engage in publishing as requirement of career advancement, some personal characteristics of the academic staff as stated by Okonedo, Popoola, Emmanuel, and Bamigboye (2015) may affect their research quantity and quality. Personal characteristics such as gender, educational qualifications among others. These factors as expressed by these researchers could contribute positively or negatively to academic staff research output. Academic achievements such as the attainment of a Ph.D appears to increase one's ability to conduct research. Because going through the process of Ph.D research will instil great values and norms of research on such an individual. Gender differences in performance of academic staff seem to be a controversial issue and has attracted the interest of researchers across the globe. Academic staff in Nigerian universities publish research papers in peer review journal that are index in Google Scholar and SCOPUS as their counterpart in other

countries, yet their research impact appears not to be felt internationally, therefore, it is imperative to ascertain the number of journal publications, individual academic's citation impact (H-index) in Google Scholar and Scopus database and the significant effect of gender and qualification on academic research. A study of this subject will give more insight into scientific research impact of academic staff in South East Nigerian Universities.

### **Research Questions**

1. What are the numbers of international publications of academic staff in South East Nigeria?
2. What is the h-index of international publications of academic staff in South East universities?

### **Research Hypothesis**

- Ho1 There is no significant difference in the mean ratings of academics staff with PhD and those without PhD in international publications.
- Ho2 There is no significant difference in the mean ratings of male and female academic staff on international publications.
- Ho3 There is no significant difference in the mean h-index rating among academics in the four universities

### **Literature Review**

Academic staff of the universities adds to knowledge base by conducting and communicating research findings to the outer world in a variety of format. The number of research publications an academic staff turns out in an academic year depicts how viable and productive such as academic staff is, in his/her area of specialization. The ability to publish in international journal reveals their degree of scholarship and expertise. To attain international visibility, academic staff are to publish in international reputable journal and have their articles widely cited. While enumerating the benefits of research work published in international journal, Ani

(2013) emphasized that international publication benefits both the individual academic staff and their affiliating institutions, as publication output is one of the key metrics used to assess universities' global visibility. This explains why most scientists, and university administrators prefer international publications. Research publications of academic staff in recent years have become a significantly important element among institutions of higher learning. Okebukola cited in Nwabueze, Iwighreghweta and Onoriode (2010) stressed the importance of university research output in international university rankings. It is also important for raising university ranking, which can enhance an institution's reputation and prestige. It is one of the major criteria to measure an institutions' quality, status, educational excellence, contributions and recognition. As universities are striving for recognition, strategic plans and task are done to improve the quality and quantity of research outputs. The first international university ranking was created in 2003 with the academic publications which included the number of articles published in high-end journals as the major indicator for measurement. Academic output accounts for roughly 60% of the measuring indexes used in the evaluation process (ARWU, 2013). When a university is ranked high, it implies that high quality research is carried out by the academic staff of such an institution.

Research are carried out to create new invention, nation development and to contribute to developing knowledge of the research area. Nevertheless, there are some personal characteristics of the academic staff as stated by Okonedo, Popoola, Emmanuel, and Bamigboye (2015) that effect academic research output. They include and not limited to gender, and educational qualifications. These factors as expressed by these researchers could contribute positively or negatively to academic staff research. Educational qualification is an important personal factor

that could affect the research turnover of an academic staff. It ranges from bachelor to doctorate degrees. The doctoral degree is the widely expected level for any academician in order to attain key skills of inquiry and other techniques required for research practice (Musiige and Maassen, 2014). It appears to increase one's ability to conduct research. Because going through the process of Ph.D research will instil great values and norms of research on such an individual. Babalola (2014) carried out a study on librarians in colleges of education in Nigeria. He identified educational qualifications as a significant influence on research output. Sulo, Kendagor, Kosgei, et al (2012) conducted survey on factors affecting academic staff activities in Moi University, Kenya. The study found out that researchers with Ph.D qualifications tend to undertake 3 to 4 more researches compared to masters' degree holders that undertake 3 to 2 researches. Those with undergraduate qualifications undertake 1 to 2 researches. This implies that the level of qualification influences the activities of the academic staff.

Gender is described as a social construct which distinguishes differences in the attributes of man and women. Onyeonoru (2005) refers to gender as the differentiation in roles between man and woman which is different from sex but constructed by society through socialization. Gender as a variable in research productivity and technology usage has been researched by scholars across the globe. Its differences in performance of academic staff has become a controversial issue and attracted the interest of many researchers. Symonds, Gemmell, Braisher, et al (2006) reported that there was clear difference between male and female scientist in respect with quality of their research productivity. They insist that male scientists publish more papers than their female counterparts. This may be a consequence of extra non research responsibilities.

Research publications are classified into international (foreign) publications and national (local) publications (Foster, Heppensta, Lazarz et al., 2008). For visibility, quality and international recognition, researchers in developing (African) countries prefer to publish in international journals (Ani, 2013). Though they publish in international journals, yet Ani reported that the research impact of academic staff in African universities is low compared to their counterparts in the developed countries. Kwanya (2018) argues that one of the reasons why research impact of African scholars is low was because they publish greatly in predatory journals that add little or no value to the scholar's research impact.

Several studies have examined academic staff publications and the their impact (h-index). De Groote and Raszewski (2012) compared the h-index of nursing academics in Google Scholar (GS), SCOPUS and Web of Science suggested that because h-index varies between databases, to provide a thorough and reliable assessment of a researcher's impact, it is essential to use more than one tool. Bar-Ilan (2008) study revealed that the differences in the h-indices between Web of Science and SCOPUS are not significant and differences between GS and the other two databases are much more considerable. Meho and Yang (2007), examined the research influence of 25 academics from Library and Information Science using SCOPUS and Google Scholar. The study revealed that Google Scholar retrieved more citations because it has wider coverage.

The work of Orji and Anunobi (2019) on citation of academic librarians in Google Scholar revealed that citation frequency of librarians in South-South Nigeria Universities is not encouraging. Ocholla, Ocholla and Onyancha (2013) study on research publication output of academic Librarians in Southern African

Public universities, affirmed that the average citation per paper in the humanities and social sciences was 2.6", suggesting that some articles were less cited and have low impact, thereby implying low international impact exhibited by librarians from the region under investigation. A related study by Sife and Lwoga (2014) on publication productivity and scholarly impact of academic librarians in Tanzania from 1984-2013, indicated that during the study period, academic librarians published an average of 14.5 publications per year.

Nandini and Vinay (2019) research on measuring the research productivity of social science faculty using Google Scholar found that scholars that have profile in Google Scholar received more citation. They recommended the need for scholars to create their Google Scholar profile so that they can trace out the number of citations they have received for their scholarly work. Kpolovie and Dorgu (2019) examined research productivity of 3000 faculty members in Africa. The study indicated a significant regional difference in the h-index of African faculty members. Southern African scholars have a significantly higher h-index than scholars in the other regions. Furthermore, the h-index in North Africa is considerably greater than in East, West, and Central Africa.

Research impact of 401 core school Psychology faculty members were investigated by Watkins and Chan-Park (2015). The study revealed that h-index values from Google Scholar were higher than those from Scopus. It was also discovered that faculty in doctoral training programs had significantly higher h-index values than teaching staff in specialized training programs, and that there was a difference in h-index values across academic rank and gender, but gender differences were not significant after seniority was taken into account. Jan and Anwar (2013) conducted research on impact of Pakistani authors in the Google world. 53 faculty members of library and

information science department from eight Pakistani Universities publications were analysed from Google Scholar database. The h-index, g-index, hc-index, hi-norm and e-index were used to determine authors publication impact. The study found that small number of authors received citation and their scores in various indices were low. This suggested that faculty members should publish their work in impact factor journals in order to receive more citations and higher scores in various indices.

## **Methodology**

### *Selection of Academic Staff*

Descriptive survey design was used to study two thousand five hundred and eighty-nine academic staff (2589) from federal universities in South-East, Nigeria. Multi-stage sampling techniques were adopted in selecting the sample size. Purposive sampling technique was used to select four (4) federal universities the first and second generation universities in South East that were in a existence before 2008, since academic publication from 2009 were examined. At the second stage, stratified random sampling technique was used to select three faculties (faculty of engineering, sciences and agricultural sciences) that exist in all the institutions for homogeneity. Additionally, we used same discipline in all the universities to enable us compare h-index of researchers from the same discipline. Dusick sample calculator was used to select of 337 academic staff were drawn from a total population of 2589 academic staff from the four universities under study. These academic staff responded to questionnaire which was trial tested for reliability and validity. An overall reliability of 0.90 was established using Cronbach Alpha formular. The questionnaires were used to collect demographic data of the academic staff. From the questionnaire, names, qualifications and gender of the academic staff were extracted. The names were used on the databases to search for their publications, where as qualification and

gender are personal characteristics of the academic staff that seems to effect academic research output. These characteristics were used in this study to determine their significance to academic staff research quantity and quality.

### *Databases Used in the Study*

Scopus and Google Scholar database were used to collect data on academic staff number of internationally published research articles and h-index (measure impact and productivity of academic staff publications, using number of publications and citations per publication). The search was limited to articles published between 2009 and 2018. Author's name and affiliation (name of institution) were used to extract details of papers published online by the author or co-authored, and the author's h-index in Scopus's search for authors profile interface. Whereas, Harzing's Publish or Perish version 5.0 (released 2016) software applications was used to access and extract data from Google Scholar database using author's name and affiliation (name of institution). Publish or Perish software uses Google Scholar to obtain the references, the sources which cited them and then perform the analyses present the total number of papers, total number of citations, medium number of citations per article, medium number of citations per author, medium number of citations per year, h-index, g-index etc.

## **Data Presentation and Result**

A total number of 337 questionnaires were distributed, 274 (81%) copies were found useful for the study. Demographic distribution of respondents characteristics are shown in Table 1 below.

**Table 1 Demographic Distribution of Academic Staff**

| <b>Variable</b>                          | <b>Frequency</b> | <b>Percentage (%)</b> |
|--|------------------|-----------------------|
| <b>Name of Institutions</b>              |                  |                       |
| University of Nigeria, Nsukka            | 98               | 35.8                  |
| Michael Okpara University, Umudike       | 72               | 26.3                  |
| Federal University of Technology, Owerri | 63               | 23.0                  |
| Nnamdi Azikiwe University, Awka          | 41               | 15.0                  |
| <b>Total</b>                             | <b>274</b>       | <b>100</b>            |
| <b>Faculty</b>                           |                  |                       |
| Agriculture                              | 80               | 29.2                  |
| Engineering                              | 93               | 33.9                  |
| Sciences                                 | 101              | 36.9                  |
| <b>Total</b>                             | <b>274</b>       | <b>100</b>            |
| <b>Gender</b>                            |                  |                       |
| Male                                     | 197              | 71.9                  |
| Female                                   | 77               | 28.1                  |
| <b>Total</b>                             | <b>274</b>       | <b>100</b>            |
| <b>Years of Working Experience</b>       |                  |                       |
| 1-10                                     | 88               | 32.1                  |
| 11-20                                    | 94               | 34.3                  |
| 21-30                                    | 68               | 24.8                  |
| 31-40                                    | 22               | 8.0                   |
| 41 and above                             | 2                | 0.7                   |
| <b>Total</b>                             | <b>274</b>       | <b>100</b>            |
| <b>Qualification</b>                     |                  |                       |
| With PhD                                 | 182              | 66.4                  |
| Without PhD                              | 92               | 33.6                  |
| <b>Total</b>                             | <b>274</b>       | <b>100</b>            |
| <b>Professional Rank</b>                 |                  |                       |
| Professor                                | 53               | 19.3                  |
| Reader                                   | 39               | 14.2                  |
| Senior Lecturer                          | 71               | 25.9                  |
| Lecturer 1                               | 56               | 20.4                  |
| Lecturer 11                              | 45               | 16.4                  |
| Assistant Lecturer                       | 10               | 3.6                   |
| <b>Total</b>                             | <b>274</b>       | <b>100</b>            |

The category of institutions shows that 98 respondents (35.8%) are from University of Nigeria, Micheal Okpara University 72(26.3%), Federal University of Technology Owerri 63 (23.0%), and Nnamdi Azikiwe University Awka 41 (15.0%). Majority of the respondents are from faculty of sciences 101(36.9%), Engineering 93 (33.9%) and Agriculture 80 (29.2%). Gender analysis of the respondents revealed that 197 respondents (71.9%) were male and 77 respondents (28.1%) were female. This indicates that

there are more male academics in these studied areas.

Academics that have working experience between 11-20 years constituted the highest number of respondents 94(34.3%) in the table 1, followed by 1-10 years, 88(32.1%), 68(24.8%) had worked for 21-30 years, 22(8.0%) had worked for 31-40 years and those whose years of working experience falls between 41 and above constituted the least number of respondents 2(0.7%). Academics with PhD qualification constituted 182(66.4%) while

those without PhD qualification constituted 92(33.6%). Table 1 also showed that 71(25.9%) were senior lecturers, 56(20.4%) were Lecturer 1, 53(19.3%) were Professors, 45(16.4%) were Lecturer 11, 39(14.2%) were Readers and 10(3.6%) are Assistant Lecturers. Names of the

academic staff who responded to the questionnaire were also part of the demographic variables generated. Their names were used to search for their publications in Google Scholar and SCOPUS.

**Research Question 1:** What is the number of international publications of academic staff in South East Nigeria?

**Table 2: Number of international publications of academic staff in South East universities**

| INSTITUTION | GOOGLE SCHOLAR PUBLICATIONS |       |       |     |        | SCOPUS PUBLICATIONS |      |       |     |      |
|-------------|-----------------------------|-------|-------|-----|--------|---------------------|------|-------|-----|------|
|             | TOTAL                       | MEAN  | STD   | MAX | MODE   | TOTAL               | MEAN | STD   | MAX | MODE |
| UNN         | 2210                        | 22.32 | 27.11 | 147 | 0      | 841                 | 8.49 | 12.93 | 82  | 0    |
| MOUU        | 1258                        | 18.23 | 16.89 | 66  | 4      | 53                  | 0.78 | 3.42  | 23  | 0    |
| FUTO        | 1490                        | 22.56 | 17.20 | 82  | 5      | 338                 | 5.12 | 7.64  | 41  | 0    |
| NAUA        | 944                         | 23.60 | 21.37 | 104 | 20 & 3 | 124                 | 3.10 | 6.28  | 27  | 0    |

Result in Table 2 revealed the number of international publications of academic staff in South East universities. From the Table, it was revealed that 2210(GS) and 841(SCOPUS) publications were recorded for University of Nigeria, Nsukka (UNN), 1258(GS) and 53(SCOPUS) for Michael Okpara University Umudike (MOUU), 1490(GS) and 338(SCOPUS) for Federal University of Technology Owerri (FUTO) and 944(GS) and 124(SCOPUS) for Nnamdi Azikiwe University (NAUA). On the whole, a total number of 5902(GS) and 1356(SCOPUS) international publications were recorded for academic staff in South East universities. Also, result in Table (2) revealed that academic staff with number of publications 147, 66 82, and 104, from

UNN, MOUU, FUTO, and NAUA respectively, are the most prolific authors in Google Scholar, whereas academic staff with 82, 23, 41, and 27 publications from UNN, MOUU, FUTO, and NAUA are the most prolific authors in SCOPUS respectively. Most academic staff in UNN, FUTO, and MOUU published 0, 5, and 4 publications. While in NAUA result shows bimodal number of publications produced with most academic publishing either 20 or 3 publications.

**Hypotheses 1** There is no significant difference in the mean ratings of academics staff with PhD and those without PhD in international publication.

**Google Scholar publications**

**Table 3: An independent t-test analysis of academics staff with PhD and those without PhD in international publication of academic staff in Google Scholar**

| No of Pub.  | N   | $\bar{X}$ | SD   | F     | Sig. | t    | df  | Sig.(2-tailed) | Remark      |
|-------------|-----|-----------|------|-------|------|------|-----|----------------|-------------|
| With PhD    | 182 | 2.97      | 2.29 | 13.82 | 0.00 | 5.45 | 272 | 0.00           | Significant |
| Without PhD | 92  | 1.55      | 1.35 |       |      |      |     |                |             |

The result of the analysis in Table 3 above shows that Levene's of  $F(272) = 13.82$ ,  $P = 0.00$ ,  $t(272) = 5.45$ ,  $P = 0.00$  was significant at 0.05 alpha level. This indicates that there is significant difference

in the mean responses of academics staff with PhD and those without PhD in international publication of academic staff in Google Scholar.

**Scopus publications**

**Table 4: An independent t-test analysis of academics staff with PhD and those without PhD in international publication of academic staff in Scopus**

| No of Pub.  | N   | $\bar{X}$ | SD   | F    | Sig. | t    | df  | Sig.(2-tailed) | Remark      |
|-------------|-----|-----------|------|------|------|------|-----|----------------|-------------|
| With PhD    | 182 | 1.01      | 1.27 | 1.06 | 0.30 | 3.22 | 272 | 0.01           | Significant |
| Without PhD | 92  | 0.54      | 0.79 |      |      |      |     |                |             |

The result of the analysis in Table 4 above shows that Levene's of  $F(272) = 1.06$ ,  $P = 0.30$ ,  $t(272) = 3.22$ ,  $P = 0.01$  was significant at 0.05 alpha level. This indicates that there is significant difference in the mean responses of academics staff with PhD and those without PhD in international publication of academic staff in Scopus

**Hypotheses 2** There is no significant difference in the mean ratings of male and female academic staff on international publications.

**Google Scholar Publications**

**Table 5: An independent t-test analysis of male and female academic staff on international publications of academic staff in Google Scholar.**

| Gender | N   | $\bar{X}$ | SD   | F    | Sig. | t    | df  | Sig.(2-tailed) | Remark          |
|--------|-----|-----------|------|------|------|------|-----|----------------|-----------------|
| Male   | 197 | 2.61      | 2.26 | 3.48 | 0.06 | 1.52 | 272 | 0.13           | Not Significant |
| Female | 77  | 2.18      | 1.75 |      |      |      |     |                |                 |

The result of the analysis in Table 5 above shows that Levene's of  $F(272) = 3.48$ ,  $P =$

$0.06$ ,  $t(272) = 1.52$ ,  $P = 0.13$  was not significant at 0.05 alpha level. This

indicates that the null hypothesis of no significant difference is accepted since the P-value (0.06) is greater than 0.05 level of significant. The researcher therefore,

concludes that, there was no significant difference in the mean ratings of male and female academic staff on international publications in Google Scholar.

**Scopus Publications**

**Table 6: An independent t-test analysis of male and female academic staff on international publications of academic staff in Scopus.**

| Gender | N   | $\bar{X}$ | SD   | F    | Sig. | t    | df  | Sig.(2-tailed) | Remark          |
|--------|-----|-----------|------|------|------|------|-----|----------------|-----------------|
| Male   | 197 | 0.89      | 1.26 | 2.13 | 0.15 | 0.91 | 272 | 0.37           | Not Significant |
| Female | 77  | 0.75      | 0.81 |      |      |      |     |                |                 |

The result of the analysis in Table 6 above shows that Levene’s of  $F(272) = 2.13$ ,  $P = 0.15$   $t(272) = 0.91$ ,  $P = 0.37$  was not significant at 0.05 alpha level. This indicates that the null hypothesis of no significant difference is accepted since the P-value (0.15) is greater than 0.05 level of significant. The researcher therefore,

concludes that, there was no significant difference in the mean ratings of male and female academic staff on international publications in Scopus.

**Research Question 2:** What is the H-index of international publications of academic staff in South East universities?

**Table 7: H-index of international publications of academic staff in South East universities**

| INSTITUTION | GOOGLE SCHOLAR H-INDEX |      |      |     |      | SCOPUS H-INDEX |      |      |     |      |
|-------------|------------------------|------|------|-----|------|----------------|------|------|-----|------|
|             | TOTAL                  | MEAN | STD  | MAX | MODE | TOTAL          | MEAN | STD  | MAX | MODE |
| UNN         | 353                    | 3.57 | 3.00 | 17  | 3    | 218            | 2.20 | 2.82 | 14  | 0    |
| MOUU        | 236                    | 3.47 | 2.56 | 13  | 2    | 12             | 0.18 | 0.87 | 6   | 0    |
| FUTO        | 247                    | 3.74 | 2.03 | 11  | 4    | 107            | 1.62 | 1.93 | 8   | 0    |
| NAUA        | 147                    | 3.68 | 2.28 | 13  | 2    | 45             | 1.13 | 2.15 | 9   | 0    |

Result in Table 7 revealed that H-index recorded for majority of the academic staff in UNN, MOUU, FUTO and NAUAA were 3, 2, 4 and 2 respectively from each institution in Google Scholar (GS). However, in SCOPUS database, majority of the academic staff have zero (0) H-index in all the institutions studied. The table also indicated that the highest H-index recorded for an academic staff in UNN, MOUU,

FUTO and NAUAA were 17, 13, 11 and 13 respectively in GS, whereas 14, 6, 8 and 9 H-index were recorded as the highest for an academic staff in UNN, MOUU, FUTO and NAUAA respectively in SCOPUS.

**Hypotheses 3** There is no significant difference in the mean h-index rating among academic staff in the four universities.

**Table 8: One-way ANOVA of significant difference in the mean h-index rating among academic staff in the four universities**

|                        |                | Sum of Squares | df  | Mean Square | F      | Sig. |
|------------------------|----------------|----------------|-----|-------------|--------|------|
| Google Scholar H-Index | Between Groups | 2.819          | 3   | .940        | .131   | .941 |
|                        | Within Groups  | 1924.661       | 269 | 7.155       |        |      |
|                        | Total          | 1927.480       | 272 |             |        |      |
| Scopus H-Index         | Between Groups | 171.733        | 3   | 57.244      | 12.089 | .000 |
|                        | Within Groups  | 1273.747       | 269 | 4.735       |        |      |
|                        | Total          | 1445.480       | 272 |             |        |      |

Table 8 shows the summary of ANOVA table for significant difference in the mean h-index rating among academic staff in the four universities. Since p-value = 0.941 is > alpha = 0.05, we conclude that there is no significant difference in the Google Scholar h-index mean rating among the four universities at alpha = 0.05, while p-value = 0.000 is < alpha = 0.05, we conclude that there is significant difference in the Scopus h-index mean rating among the four universities at alpha = 0.05.

### Discussion of Findings

#### *Number of International Publications of Academic Staff*

The study revealed that number of publications recorded for academic staff in Google Scholar database is higher than that recorded in SCOPUS in the four universities studied. This finding suggest that Google Scholar include journal articles, conference proceedings and other document sources in their database that are not included in SCOPUS. These findings corroborate with Watkin and Chan-Park (2015); Ruscio et al (2012); Meho and

Yang (2007) which findings revealed that Google Scholar index over 30 different documents which includes journals, conference proceedings, workshop contributions, books and book chapters etc; whereas SCOPUS index mainly journals and does not include those document sources. Findings also revealed that academic staff who do not have publication in SCOPUS in various universities is very high, moreover, in Google Scholar there are some academic staff who do not have publications, but not as many as those that do not have in SCOPUS. Also findings showed that greater number of academic staff produced lesser number of publications within the period whereas lesser number of academic produced greater number of publications within the period. These findings corroborate Lotka's (1926) law of scientific productivity which postulates that large proportions of authors tend to produce relatively few equivalents, with the bulk of production being made by a small number of individuals.

The null hypothesis which states that there is no significant difference in the mean ratings of academics staff with PhD

and those without PhD in international publication was rejected in both Google Scholar and Scopus. This implies that obtaining a Ph.D degree for an academic staff is a determinant factor towards their productivity. This finding align with the findings of (Musiige and Maassen, 2014; Babalola, 2014; Sulo, Kendagor, Kosgei, et al 2012) that doctoral degree is the level to attain key skills of inquiry and other techniques required for research practice to increase one's ability to conduct research. On the contrary, the study of Okonedo, Popoola, Emmanuel, et al 2015; Schwartz, 1991) reported that possession of Ph.D do not influence publication output of scholars.

Furthermore, the null hypothesis "there is no significant difference in the mean ratings of male and female academic staff on international publications" was accepted. This implies that gender does not influence number or quantity of academic staff international publications. This result corresponds with the findings of Okonedo, Popoola, Emmanuel, et al 2015; Kendagor, Kosgei, Tuitoek, et al. 2012; Lertputtarak, 2008), all revealed that there was no significance influence of gender on the publication output of scholars.

#### *H-Index of Academic Staff Publication*

The research impact of academic staff in the present study was measured using H-Index (h) which means an academic staff have (h) number of publications and each of the publication has been cited at least (h) times. For instance, an academic staff that has 10 h-index means that the individual has published at least 10 publications that has each been cited at least 10 times. The present findings show that in Google Scholar and SCOPUS, majority of the academic staff in South East universities have between 4 and 2 publications impact (h-index) recorded for them in Google Scholar whereas majority of them have 0 (h-index) in SCOPUS. This finding agreed with Ocholla, Ocholla and Onyanacha (2013) that the h-index that determines the impact of papers is below 4,

with most authors obtaining h-index below 2.

Individual academic staff publication impact from table in Appendixes showed that value of h-index of individual academic staff for both Google Scholar and SCOPUS were found to be different and GS h-index values are greater than SCOPUS h-index values. This is in line with the findings of Egghe (2018); Ruscio et al (2012); Watkins and Chan-Park (2015) which revealed that h-index value depends on the database (Google Scholar, SCOPUS and Web of Science) from which the computation were made because difference databases include different sources. H-index values of GS were higher than those from SCOPUS. The result also indicated that no academic staff among those studied has up to 20 h-index in both databases studied. Ten academic staff have (17, 13, 13, 13, 12, 12, 11, 11, 10) and 3 academic staff (14, 13, 13) in Google Scholar and SCOPUS respectively. However, Kpolovie and Onoshagbeghe (2017); Becker Guides (2016); Hirsch (2005) and Thomson Reuters (2010) stated that "to be characterized as a successful scientist, one must have at least 20 h-index after 20 years of scientific activity". This suggests that academic staff of the institutions studied are yet to attain this academic height and attainment as none of them have 20 h-index and above. Therefore, it is imperative to encourage research and quality publications by sponsoring research, giving research grants, recognitions and incentives to academic staff and researchers.

Additionally, the null hypotheses revealed that there is no significant difference in the mean h-index rating among academic staff in the four universities in Google Scholar, whereas there is a significant difference in SCOPUS. This suggests that university administrations should encouraged their researchers to archive their research papers in local journals in online platforms, self-archive in institutional repository, create

Google Scholar and Research gate profile, digitized their publications in local journals and conference proceedings for submission and upload in Google Scholar, Research gate and institutional repository. The aim is to create global visibility of their research and to enhance citation of their work. The management of the university also should come up with policy that will encourage academic staff to publish certain number of publications in journals index by SCOPUS, SNIPS and Thompson Reuters in order to be promoted. These measures are to improve quality and number of academic research output

### **Implication and Recommendation**

This study revealed that though academic staff in South East Universities produce research publications, but the impact of these publications in international scene is low as a result of the low h-index. Based on the findings the study recommend that academic staff in South East Nigerian Universities should improvement the quality of their publication to increase citation and impact. The university management should conduct trainings for academic staff and researchers on publishing in reputable journals that are indexed in SCOPUS, Google Scholar, Web of Science etc. They should encourage academic staff to publish quality papers that will receive high h-index by providing research grants, sponsorship and incentives to academic staff that publish in internationally reputable journals. This will enhance the university visibility, reputation and rank.

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