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Publication Patterns of Academics in Science and Engineering in Federal Universities in Southern Nigeria

Victoria N. Okafor

Nnamdi Azikiwe Library, University of Nigeria, Nsukka

Abstract

This paper is a study on publication patterns of academics in Science and Engineering in Southern Nigeria for period of ten years from 1997-2006. The problem of the study is to find out the extent of research productivity of academics in science and engineering in Southern Nigeria. The study specifically finds out the influence of rank, length of services, academic qualifications, and age of the academic staff on research productivity. The six out of thirteen federal universities were selected through stratified random sampling. The data was collected through the use of questionnaire. Out of 435 questionnaire issued out, 291 completed their questionnaire well. The data were organised using descriptive statistics and also to the distribution of the publications. While inferential statistics of Analysis of Variance was used to know publication differences among academics in zones, ranks, qualifications, length of services. The study revealed that about 30% of the academics published 0-4 journal articles. That length of services, academic qualification and rank has influence on research productivity. It was found out that academics in south-west publish more in overseas journals, unlike academics from south-south and south-east who publish more in local journals. However age of the university has no influence on level of research productivity. It was recommended that mentoring, co-authorship, collaboration and sponsorship to international conferences will help to improve research productivity. The implication of this study is that if Nigerian academics in science and engineering continue to publish more in local journals, the out come of their research may not be visible and accessible to other researchers in their field.

Keywords: Bibliometric studies, Academics, Research Pattern, Research Productivity, Southern Nigeria.

Introduction

Research productivity is a means by which academics contribute their own knowledge to the existing body of knowledge. Ingiesi and Pouris (2012) recognized that knowledge accumulation is considered as one of the key factors affecting the productive capacity of a country and hence its ability to measure in international competitiveness. Hence in Ramsden (1994) his paper, acknowledged that most critical indicator of research productivity is publication.

Dest Herdc as cited in Ocholla, Ochlla and Onyancha (2012) defines research publications as books, book chapters, journal articles and/or conference publications. The publishing of research results in the form of articles or papers is an act of information transfer. This is a cyclic process of production, transfer and consumption of information. Information and documentation including printed and online materials are the most important means to control and access scientific results.

Publications are required for various reasons, Ocholla, Ochlla and Onyancha (2012) agreed that on a more practical basis research is done to fulfill learning, domestic and career needs; to satisfy curiosity; for egoistic reasons, such as recognition and visibility; for career related rewards, such as promotion, securing tenure or permanent appointment; and for self development or growth. On other hand Jacob (1998) emphasized that such studies are done to compare the amount of research in different countries, the amount of research work produced in different periods or the amount of work produced in different sub-divisions of fields and among different ranks of professions or even among regions.

In terms of the analysis Hammouti (2010) was of the view that scientific productivity depends on various factors, such as age, subject specialization, laboratories, histories and economic indicators and also qualification. However scientists from developing countries publish in the national and local journals which most of the time are not indexed by

database. Based on this Popoola (2002) used self-developed questionnaire to know the effect of information sources and services utilization on research output of social scientists in Nigeria Universities. Oduwole and Ikhizama (2007) used survey method, through the questionnaire to find out the research output of Librarians in Agricultural Research Institutes in Nigerian respectively. In another development Chiemeke, Longe, Longe and Shaib (2009) studied African Journals Online (AJOL) to find out the research output from Nigerian Tertiary institutions by randomly selecting nine journals.

Scientific research is contribution made toward scientific progress, regardless of whether this applies in the universal sphere or is focused on a particular scientific problem of local relevance. OECD recognized that economics are becoming more dependent on the production, distribution and use of knowledge than ever before both in high technology manufacturing industries and at the centre of this emerging economy is the science system. Such data will be very useful in decision-making, in administration and planning, as well as in collection development and use in libraries. Based on importance of research on science and engineering plus the fact that studies done so far are not focused Productivity of academics in science and engineering. This study therefore tried to find out the research output and publication pattern of academics in science and engineering in southern Nigeria from 1997-2006.

Objective of the Study.

The following research questions were formulated to guide the study.

1. What is the range of research productivity output of academics in science and engineering in southern Nigerian universities?
2. What is the level of research productivity of the academics according to the geo-political zones in southern Nigeria?
3. What is the link between the age of different universities on the research productivity of the academics in science and engineering?
4. Does academic qualification influence research productivity of academics in

science and engineering in southern Nigerian Universities?
5. Does length of services influence the research productivity of academics in science and engineering in southern Nigerian Universities?
6. Is there a link between rank and the research productivity of academics in science and engineering?

The following null hypothesis postulated will be accepted or rejected at 0.05 level of significance. These are stated below:

1. There is no significant difference in the mean research output scores of academics in different geo-political zones in southern Nigeria.
2. There is no significant difference in the mean research output scores of academics from different ages of university in southern Nigeria.
3. There is no significant difference in the mean research output scores of academics with different qualifications in southern Nigeria.
4. There is no significant difference in the mean research output scores of academics with different length of service in southern Nigeria.
5. There is no significant difference in the mean research output scores of academics with different rank in southern Nigeria.

Literature Review

The study of research productivity of academics and factors associated with it has led to different types of study. There are many ways in which empirical studies on bibliometrics can be reviewed. Harri (as cited in Ramsden, 1994) made a useful distinction between four related but distinct ways of evaluating research performance: impact, quality, importance and quantity. Impact is a measure of the influence of a piece of research and is evaluated by means of the number of citations made to it by other scholars while importance and quality are evaluated through expert value judgments, typically using peer review and neither quality nor importance can be captured through bibliometric indicators alone. He went further to say that quantity is the simplest of the measures and the best for developing countries like Nigeria hence

quantity is the only productivity method used in this study. In asimilar way, Ramsden (1994) used survey method of 18 Australian higher education institutions established before 1987 and found out that research productivity for five years 1985-1989 in average is low, while the range of variation is high, that is most papers are produced by few academics. He found that pre-1987 universities geared more strongly towards research, nearly 2 out of

every 10 staff reported that they had not produced a single journal article, even as a co-author, in five years. However a median publication of 242 academics in Natural Science was 8 referred articles and 20% of them did not produce any publication. The median number of publications for academics in Engineering was 1 referred article while 40% of them did not produce any publication within the period of study.

Mularski, Bradigan and Prior (1991) examined the publication patterns of U.S. academic health science librarians. A survey was sent to a random sample of Medical Library Association (MLA). According to this survey, the academic health sciences librarians from the Northeast part of the United State were the most productive (35.1% of the productivities, averaging 4.6 publications per respondent), followed closely by the Midwest librarians (32.1%, and average of 3.2 publications per respondent). The next is West with 17.85 of the total percent followed by Southwest with only 8.5%. The least is Southwest region with 8.5% produced the fewest librarian authors, with only 11 (12.8%) coming from that part of the country.

Ashoor and Chaudhry as cited in Okafor (2008) in their study of the publication pattern of scientists working in Saudi Arabia based their study on a computerized database of journal articles derived from Scientific Citation Index (1980-1984). They found out that the most productive institution was King Saud University (K. S. U.) the oldest and the largest university in the country, which produced more than half of the papers, (607 publications or 56.1%). Mularski, Bradigan and Prior (1991), in their study, twenty-eight respondents (16.6%) with advanced degrees had average of 4.4 publications per respondent, and those with doctorates had average of 11.8 publications each. The librarians with higher degree had an

average of 2.4 publications per respondent. Individuals with high degrees were more prolific as authors. Narongrit, Teerasak, Preeyanuch, Chatree and Nongyao (2010) in their research performance evaluation of Thailand national research universities during 2007-2009 found out that universities with lower number of published articles appeared to perform better in terms of average citation/article and citations received/cited article and also 60% of the published articles were responsible for all citations received.

Bibliometric studies done in Africa among others are, Teferra (2004) in his survey study of Africana scientists, used e-mail based open-ended and self-administered questionnaire and found the trend of the respondents productivity over the last five years. Only one in two claimed to have good or very good productivity. Some 30% described their productivity as either poor or in decline, and about 15% said it was stable. Also Jacob as cited in Hammauti (2010) published a bibliometic study of the publication patterns of scientists in South Africa (1992-96). This study tried to establish the relation between status of scientists and their productivity. The findings obtained in the study showed that the productivity of the scientist is directly related to their status that is scientists with higher status like professors most of whom possessed PhD, published and presented more papers compared to those who had lower degree of qualifications.

However Ingiesi-Lotz and Pouris (2012) argued that research output is a manifestation of the improvement of human capital in the economy. They examined the relationship in South Africa for the period 1980-2008. Using the Auto Regressive Distributed Lag (ARDL) method they investigated the relationship between GDP and the comparative research performance of the country in relation to the rest of the world. The results of the study indicated that in South Africa for the period of 1980-2008 the comparative performance of research output can be considered as a factor affecting the economic growth of the country. In another study, Ocholla, Ocholla and Onyancha (2012) used content analysis to establish and compare the research and publication patterns and output of academic librarians in Eastern Africa from 2000-2009. The results revealed that the

research visibility of academic librarians was insignificant, publication of research findings over the course of the ten years has been minimal and publication from senior academic librarians has also been minimal. This may due to the fact that the researchers did not consider publication in local journals.

Few of bibliometric studies have be done in Nigeria. Popoola (2002) used a questionnaire to find the output of social scientists in Nigerian universities. The respondents produced an average of 7.0 publications from (1999-2001) with an average of approximately two publications per year. Oduwole and Ihizama (2007) used survey method and questionnaire to find out the research output of librarians in Nigerian agricultural research institutes. They found out that the librarians research output although generally low, was related to their work experience. Chiemeke, Longe, Longe and Shaib (2009) investigated research output of Nigerian Tertiary institutions using nine journals randomly selected from African Journals Online (AJOL). They found out that the volume of research papers from Nigeria in the journals analysed amounted to 39.1% of total number of publications in those journals (1999-2005). Study of few journals in AJOL will not present the publication output and extent of publishing of Nigerian's academics. In similar study, Okafor and Dike (2010) tried to compare the outcome of research output of the academics with Lotka's law. The findings showed that analysis of overseas journals nearly agreed with Lotka's law which says that sixty percent of the contributors have to publish at least one article, while analysis of local articles was not in line with the law. In another study, Okafor (2010) analysed research output of the academics in science and engineering by comparing the results of different departments in science and engineering. The result showed that academics in zoology published more journal articles than other departments in sciences, while petroleum/chemical engineering published highest in engineering faculty. Also Okafor (2011) tried to compare research output of six universities in southern Nigeria. The result showed University of Benin published highest in local journals while university of Ibadan published more in overseas journals than others. Based on the reviewed literature, the present study looked into range of publications, publications among regions and age of the universities where the academics are based. Also the study tried to find out relationship between publications and the following: rank, qualifications and length of service.

Methodology

Most studies that deal with publication patterns of academics are best done using database of publications. However such databases are not available in Nigeria and international databases like the Science Citation Index and Social Citation Index do not index most Nigeria journals. Hence the author of the present study decided to find out research pattern of academics in science and engineering over ten years through the use of questionnaire. Hence descriptive survey method was used for the study. The study was conducted in southern Nigeria. Southern Nigeria is made up of three geo-political zones: south-east, south-south and south-west.

The population of the study consisted of academics in Science and Engineering in first, second and third generation federal universities in southern Nigeria. Stratified random sampling at two level of stratification was used to select two universities from each zone. The first level was geo-political zone namely South-West zone, South-South zone and South-East zone. The second level of stratification was the age of the universities, which were first generation universities, second generation universities and third generation universities in southern Nigeria.

The following universities were selected: University of Ibadan (UNIBADAN) and University of Agriculture, Abeokuta (UNAAB) (South West); University of Benin (UNIBEN) and University of Uyo (UNIUYO) (South-South); University of Nigeria, Nsukka (UNN) and Nnamdi Azikiwe University, Awka (NAU) (South-East). On the whole a total of six universities were used out of 13, two from each zone. The respondents used for this study were academics from lecturer II (two) and above. To check whether the respondents fill the right information, the researchers collected some of the data themselves and also trained the research assistants. We have to see that most of the respondents fill the questionnaire using information from their laptop. Also in the collation of the data when the number of local

and overseas articles do not sum up to the total given by the respondents, such questionnaire were discarded. Out of 435 academics present in the faculties of science and engineering that were issued with questionnaire, 353 of them returned their own questionnaire while 291 completed the questionnaire well. This represents 66.9% of the respondents.

Analysis and Discussion of the Findings

The first objective of the study was to find out the extent of research output of academics in in Universities in southern Nigerian was represented in the bar chart in Fig 1 below.

Figure 1: Bar chart of journal articles of academics at interval.
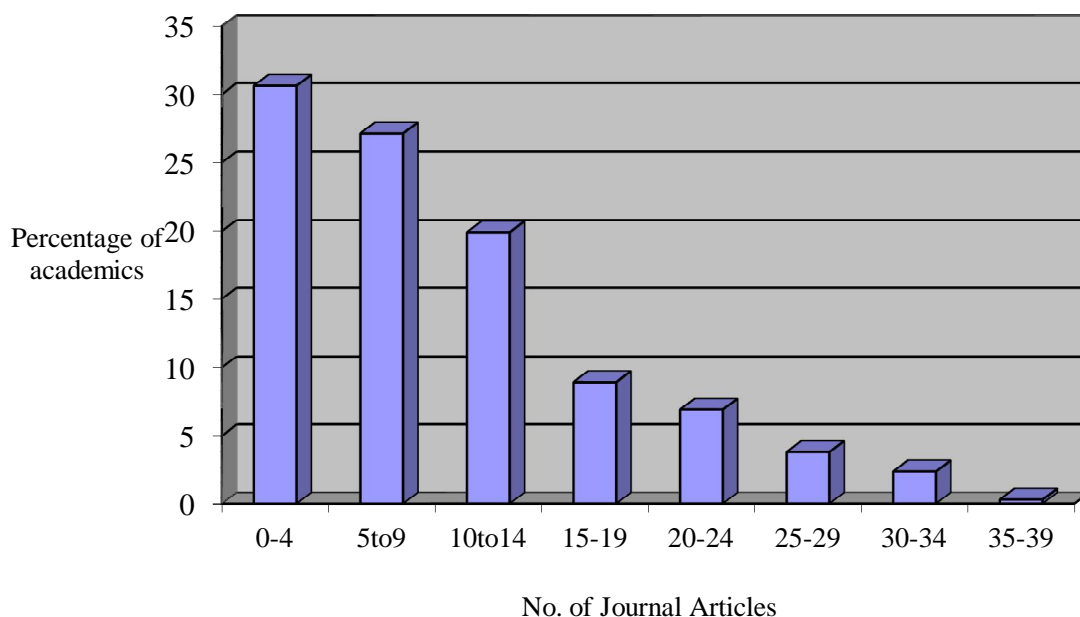
The articles for the last ten years arranged according to intervals are represented in the bar chart in Fig 1 above. Almost one-third of the academics, that is, 30.6% produced 0-4 articles. While only one academic had articles between 35-39 journal articles. Observation from the bar chart above is that, as the number of articles increases the percentage of the academics involved in the production decreases. The outcome of the research productivity in this study is in line with Teferra (2004) who used self-administered questionnaire and found that only one in two claimed to have a good productivity and 30% of his respondents descried their productivity as either poor or in decline. Also Ramsden (1994) used survey and found out that 2 out of 10 staff reported that they had not produced a single journal article. The low productivity of academics in southern

Nigeria may be due to inadequate research materials and equipment and lack of enough information resources, internet facilities for detailed and current literature. Other factor that the researcher observed was that many of the respondents were young academics especially in engineering. Okafor and Dike (2010) in their study of barriers to research productivity of academics in Nigeria found out among others that lack of research materials and equipment, inadequate funding, insufficient public utilities, excess work load and in conducive working environment are hindering research.

The level of research output of academics in the three geo-political zones.

Journal article publications of the academics in science and engineering according to geo-political zones are shown in the Table 1 below.

Table 1: Journal Articles of academics in the last ten years according to zone.

Zone	No. of Academics	Total no. of Articles	Mean
South-west	77	674	8.75
South-east	113	1059	9.38
South-south	101	1035	10.25
Total	291	2768	9.51

The research outputs of the three geo-political zones are summarized in the Table 1 above. This shows that south-south had the highest published articles with the mean of 10.25. This is followed by south-east with the mean of 9.38 and south-west with the mean of 8.75.

In order to find out where these academics publish their articles, that is whether in overseas or local journals, a further analysis was done as shown in the Table 2 below.

Table 2: Journal Articles in Overseas and Local Journals

Zone	Mean Articles in local Journals	Mean Articles in Overseas Journals
South-west	3.85	3.98
South-east	4.88	2.32
South-south	6.24	1.81
Total	5.08	2.58

Table 2 above showed that south-west has the highest publications in overseas journal with mean of 3.98 but the least in local journals with mean of 3.85. On the other hand south-south has the highest in local journal publications with mean of 6.24 but the least in overseas journal with mean of 1.81.

In order to find out whether there is a significant difference in the articles published by the respondents in both local and overseas journals, one-way analysis of variance was used as shown in Table 3 below**.**

Table 3: ANOVA of local and overseas journal articles in the last ten years.

Sources	Sum of squares	df	Mean Square	f	sig
Articles in local journals Between groups	194.375	2	99.187	4.19	1.018
Within groups	5028.714	212	3.673		
Total	**5223.089**	**214**			
Articles in Overseas journals Between groups	1508.059	2	754.030	2.54	0.08
Within groups	6275.522	212	295.781		
Total	**7783.581**	**214**			

The tabulated f-value at 5% level of significance is 3.0, while calculated f-cal is 4.19, then f-cal>f-value. This shows that there is a mean difference in the mean articles published in local journals. But the f-cal for overseas journals is 2.54, since f-value<f-cal, then there is no significance difference in the mean number of articles in overseas journal from different geo-political zones of southern Nigeria universities

Mularski, Bardigan and Prior examined the publication patterns of U.S. academic health science librarians. The difference observed in Nigerian academic may be due to the fact that many universities in the south west zone of Nigeria lay emphasise in publication in overseas journals. During the collection of data, the researcher interviewed some of the academics and found out that they are required to publish 50% of their research work in overseas journal. That is also observed in the result as shown above, the southwest respondent had an average of 3.98 of journal articles in overseas journals while others had 2.32 and 1.81 respectively. The level of publications of academics depends on number of papers submitted for publication (quantity) and number of articles accepted for publications (quality). Singh (2006) emphasised that articles from developing countries may not be published due to poor

style of writing, inconclusive or appropriate statistical analysis, poor study design or research that is innovative.

Influence of generation of university on the research output of different universities?

Table 4: Mean Number of Publications According to Age of the University

Generation	N	Mean	Std. Deviation
First generation 1960-1970	186	9.98	8.159
Second, third generation 1975- 1985	105	8.70	6.804

From Table 4 above the mean number of articles published in the last ten years shows that academics in the first generation university had mean of 9.98 approximately, while academics second and third generation had mean of 8.70 approximately 9.0. In order to show whether these generations significantly differ from each other, null hypothesis 2 was tested.

The summaries of research outputs of different generation universities for the last ten years were presented on Table 4 below.

Null Hypothesis 2

There is no significant difference in the mean research output among academics in the old and newer universities.

In order to know whether there is significant different in the mean publication output among old and newer universities, t-test was used as shown in the Table 5 below.

Table 5: t-test for Different Generation Universities

Age of University	N	Mean	Std. Deviation	df	t	Sig
First generation	186	9.98	8.159	289	1.365	.173
Second, third generation	105	8.70	6.804			

The tabulated t_T at 5% level of significance is 1.96 while t_c is 1.365. Since $t_c<t_T$ the null hypothesis was not rejected. This means that the difference between the mean productivity of the respondents in different generation universities was not statistically significant. This means that there is no difference in the mean publication output of the academics on whether the respondents were from first, second and third generation universities. The findings of the study showed that first generation universities had a mean productivity of 9.98, which is greater than second and third generation, which had a mean productivity of 8.70. This implies that the first generation universities have greater mean productivity than the second and third generation universities. Although the mean number of journal articles is not the same, t-test showed that there is no statistical

significant difference among the first and second/third generation universities in terms of research output.. This is in line with Ashoor and Chaudlry (1993) and Jacob (1996) who found that older universities publish more journal articles than younger universities. It is assumed that older universities should have higher academic rank. They should also have better equipment, laboratories, libraries and postgraduate students, which will help the academics to publish more journal articles.

Influence of academic qualifications on research productivity of the academics.

Distribution According to Academic Qualification

Table 6: *Mean Number of Publications According to* Academic Qualifications

Qualification	Number of Academics	Total Articles	Mean
Ph.D	184	2119	11.50
M.Phil	11	48	4.36
M.Sc/M.Eng	96	466	4.85

Academic qualification is an important variable in Nigerian Universities. The NUC has made it compulsory that PhD should be a basic qualification for employing academic staff into the Universities. Some universities have started implementing that long ago. Out of 291 respondents who took part in the study, 184 had their Ph.D with a mean 11.50 journal articles while 11 had MPhil with a mean of 4.36 journal articles and 96 had M.Sc or M.Engr with a mean of 4.85 journal articles. Analysis of Variance was used to know whether there is a significance difference.

Table 7: ANOVA for Number of Journal Articles Published According to Qualifications.

Source	Sum of Squares	df	Mean Square	F	Sig
Qualification	3682.986	2	1841.493	39.118	.000
Within Groups	13557.694	288	47.075		
Total	17240.680290				

The tabulated F-value at 5% level of significance of 3.00 is less than calculated, which 39.118 is. The probability is 0.000<0.05. We reject the null hypothesis. This means that there is a significant difference in the mean productivity of academics with different qualifications. In order to find out where the difference lies, multiple comparison of different academic qualifications and the journal articles in the last ten years was done using LSD as shown in Table 8 below.

Table 8: Multiple comparison of Academic Journal Articles According to Qualifications.

(I)Academic Qualification	(J) Academic Qualification	Mean Difference (I-J)	Std Error	Sig
Ph.D	MPhil	7.16	2.129	.000
	MSc	6.67	.868	.000
MPhil	Ph.D	-7.16	2.129	.000
	MSc	0-.49	2-186	.904
MSc	Ph.D	-6.67	.868	.000
	MPhil	0.49	2.186	.904

Academics with Ph.D qualification are significantly different from those who have Master of philosophy and Master of Science in the number of articles published in the last ten years, while M.Sc or M.Engr are not significantly different from those who have M.Phil in terms of articles published in the last ten years. The influence of qualification on research productivity was noted by Mularshi, Bardigan and Prioir (1991) who found out those academic librarians with doctorate degree had more publications than those with advance degrees. The reason may be due the fact that PhD is a full research and the researcher can publish more journal articles from it and the person is exposed to meet other researcher in his or her area of interest and they can collaborate or co-author research work. It is also in line with Jacob's study in 2001, which found out that South African scientists with M.Sc. produced four papers on the average whereas scientists with Ph.D produced more than seven papers on average during the five year period.

Influence of length of services on the research productivity of academics. Influence on length of service on research productivity of the academics under study is presented in Table 9 below.

Table 9: Length of Service and Mean of Journal Articles

Length of Service (years)	Number of Academics	Total Number of Journal Articles	Mean
1-4	31	100	3.22
5-9	85	532	6.25
10-14	64	721	11.25
15-19	36	411	11.26
20-24	37	492	13.30
25-29	14	204	14.57
30 and above	14	132	9.43

From Table 9 above, one can observe that academics with length of service from 1-4 years had a mean journal article of 3.22 and academics with 5-9 years of services had 6.25 mean journal article publications. However academics with 10-14 years of services had 11.25 mean publications, while academics with 15-19 years of services had 11.26 mean publications. On the other hand, academics with 20-24 years of services had 13.30 mean journal article publications, 25-29 years of service had mean of 14.57 and 30 and above years of services had mean of 9.43. With above analysis it is clear that productive years of services is between 10-29 years for these respondents.

It could be observed that few of the respondents in 1-9 years of services had 10-19 publications. This may be due to the fact that some of the respondents are still doing their Ph.D research. However, respondents in 10-29 years of services may have finish their Ph.D, and therefore most have published some articles from there and also are eligible to supervise postgraduate students. This will lead to more research and more publications. It could also be observed that from 30 years of service and above the urge to publish started to decline. This may be due to the fact that they must have reached the zenith of their promotion therefore may not need more publications or that they are getting older.

ANOVA

Table 10: Number of journal articles published in the last ten years

	Sum of Squares	df	Mean Square	F	Sig
Length of service	3787.396	6	631.233	13.325	.000
Within Groups	13453.285	284	47.371		
Total	17240.680	290			

The probability value is 0.000 which is less than 5% level of significance and the calculated $F_c = 13.33$ while the $F_T = 3.00$. Since $F_{c > } F_T$ we reject the null hypothesis. This means that length of services influences their productivity in terms of number of publications.

Influence of academic rank on the research output of academics.

The respondents were grouped into three academic ranks as shown in Table11 .

Distribution According to Rank

Table 11: Number of Journal Articles Published in the Last Ten Years According to Rank

	N	Mean
Lecturer I and II	141	5.48
Senior Lecturer	99	10.89
Reader and Professor	51	18.02
Total	291	9.52

While Table 11 above shows that the mean productivity of Professor/Reader is 18.02 and that of senior lecturers are 10.89. The mean productivity of lecturer I/lecturer II is 5.48. This shows that academics in the professorial cadre published more journal articles than other academics in the level of senior lecturer and lecturer I and II although the academics present rank was used. Null hypothesis was tested to find whether there is any significant difference. Table 12 below shows ANOVA of number of articles published in the last ten years and rank.

Table 12: ANOVA Table for Number Journal Articles Published in the Last Ten Years According to Rank

	Sum of Squares	df	Mean Square	F	Sig.
Rank	6176.759	2	3088.380	80.392	.000
Within Groups	11063.921	288	38.416		
Total	17240.680	290			

The probability value is 0.000 which is less than 5% level of significance and the calculated $F_c = 80.392$ while the $F_T = 3.00$. Since $F_c > F_T$ we reject the null hypothesis. This means that rank of academics influence their productivity in terms of number of publications.

In order to find out where the difference lay, multiple comparisons of different rank and journal articles in the last ten years using least significance difference was carried out as in Table 13 below.

Table 13: Multiple Comparisons of Different Rank and Journal Articles in the Last Ten Years Using LSD

(I) Rank	(J) Rank	Mean difference (I-J)	Std error	sig
Lecturer I & II	Senior lecturer	-5.41*	0.814	.000
	Reader & Professor	-12.54*	1.014	.000
Senior lecturer	Lecturer I & II	5.41*	0.814	.000
	Reader & Professor	-7.13*	1.070	
Reader & Professor	Lecturer I & II	12.54*	1.014	.000
	Senior lecturer	7.13*	1.070	

*The mean difference is significant at the 0.05 level

Lecturer I & II when compared with senior lecturer and reader/professors, LSD showed that they are significantly different since P= 000<0.05, which means that professor and senior lecturer published more journal articles than lecturer I & II. On the other hand, reader and professor published more journal article than senior lecturers. On the contrary, Bottle, Hossein, Bottle and Adesanya (1994) carried out their research in chemistry using Chemical Abstract Online and compared academics across different countries. They found out that there was no significant difference between the overall samples of different ranks of academics. Aina and Mooko (1999) and Oduwole and Ikhizama (2007) found that the middle cadre of the library profession at the level of senior lecturer produced the highest number of research output than those on professorial cadre. On the other hand, the present study agreed with Jacobs as cited in Hammauti (2010) found out that productivity of the scientist is directly related to their status that is scientists with higher status publish more articles when compared with those with lower status. One can see that professors and readers produced more research output in this study. This may be due to the fact that they get research grants easily and at times they do not teach large classes. They are the ones who supervise the Ph.D students most of the time. Also there is no doubt that academics work harder when they are at the level of senior lecturer in other to qualify for promotion to professorial cadre.

Limitation of the Study

The researchers used questionnaire in collecting data for the study instead of using data base. This was due to the fact that there is no databases organised in Nigeria that will incorporate researches of academics to enable us know the number of their productivity. It is also to note that only few federal universities of recent have accessible institution repository in southern Nigeria.

Conclusion

Questionnaire was used in the data collection because in some developing countries like Nigeria there is no institutional repository or databases that content publications of the researchers. Also the result from the study showed that academics publish more in the local journals, which are not index in ISI or Social Science citation index. Therefore to get the picture of the publication pattern one has to use questionnaire. The findings showed that about 56% published 0-9 articles, 28% 10-19 articles and 16% 20-39 articles. Also academics from south-west published more in overseas journals while those from south-east and south-south published more in local journals. The study also showed that there was significance difference between publications of academics with Ph.D qualification and those who have Master of philosophy and Master of Science in the number of articles published in the last ten years, but no difference in publications of the academics from different ages of universities. However, length of services and rank of the academics had influence on their publication productivity. For academics in the country to publish more in indexed journals or overseas journals the following recommendation were suggested:

Recommendations

Mentoring: This is a component in training of young professional. It may involve a senior colleague in the profession giving personal guidance, sponsorship, role modelling to younger members of the profession. It involves mentors playing a significant role in teaching coaching and developing the skills and the talents of others. The relationship is, at its most fundamental, a multifaceted collaboration between a junior professional and a senior professional with the primary goal being the nurturing of the junior professional's development.

Collaboration: Collaboration with overseas team researchers. This can be done through exchange programmes. International research collaboration can occur when researchers engage in consultations, providing advice, conferences or create complementary research agenda. Other forms of cooperation include joint research projects, the sharing of research facilities, allowing access to research data and

discoveries and linking researchers to virtual networks. It may also involve training and development through co-supervision of Ph.D students from other countries. Therefore it means that professionals working together to carry out research which will always come out better when the input of other are involved. It is cooperation in working with others for a common purpose or benefit.

Co-authorship: This will enable researchers to publish with other eminent researchers in his field. This involves authors who are conceived and planned to work. It entails that all authors should contribute significantly to the conception, design, execution, and/or analysis and interpretation of data. They must participate in drafting, reviewing and /or revising the manuscript for intellectual content. Co-authorship touches on some of the most important and sensitive subjects in science which involves trust among colleagues, the mentor relationship in a research laboratory and the role of productivity and publications in career advancement.

Attendance to International Conferences: This can be achieved through sponsorship from the government, institutions, corporate bodies and overseas sponsorship. This will enable the researchers to meet other contemporaries in their field.

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