

IRCAB JOURNAL OF SOCIAL AND MANAGEMENT SCIENCE

Volume 1 Number 1

ISSN: 2226-0544

**Copyright @ International Research and Capacity Building Foundation
Postnet Suite 422, Private Bag X3, Northriding 2162
Johannesburg, South Africa
Website: www.ircabfoundation.org
Email: info@ircabfoundation.org**

and
ling
the
nal,
are
ure

he
at
Ve
in
ng

ie
o
d

IRCAB JOURNAL OF SOCIAL AND MANAGEMENT SCIENCE

Managing Editor
LEWU Francis PhD

Cape Peninsula University of Technology
Private Bag X8 Wellington Campus
Wellington 7654, Western Cape
South Africa

EDITORIAL BOARD MEMBERS

Professor DUNCAN Norman PhD
University of the Witwatersrand
Private Bag 3, Wits, 2050
South Africa

DACHLAN Hamsinah PhD
Hasanuddin University
South Sulawesi
Indonesia

JOUBERT Pierre PhD
Vaal University of Technology
Private Bag X 021, VANDERBIJLPARK
South Africa

IMHONDE Henry PhD
Ambrose Alli University
Ekpoma, Edo State
Nigeria

Professor MAREE Kobus PhD
University of Pretoria
Pretoria
South Africa

ONYEAGHALAJI Modestus PhD
University of Lagos
Nigeria

KASANGA George
Business Editor 1
Postnet Suite 422,
Private Bag X3, Northriding 2162,
Johannesburg.
South Africa.
kgeorge@ircabfoundation.org
+27736140711

Professor OMOREGIE Eunice Oti PhD
Ambrose Alli University
Ekpoma, Edo State
Nigeria

Professor MNGUNI Peliwe PhD
University of South Africa
Johannesburg
South Africa

NWACHUKWU Ruphina PhD
Xiaozhuang University
Nanjing Province
China

Professor OKHAREDIA Akhabue PhD
University of South Africa
Johannesburg
South Africa

Professor FERREIRA Ronel PhD
University of Pretoria
Pretoria
South Africa

KRUBU Dorcas Ejemeh
Business Editor 11
Ambrose Alli University
Ekpoma, Edo State.
Nigeria.
dkrubu@ircabfoundation.org
+2347036360662

**BIBLIOGRAPHIC CHARACTERISTICS OF SCIENTIFIC RESEARCH ARTICLES IN
THE NIGERIAN INSTITUTE OF AGRICULTURAL ENGINEERING (NIAE)
PROCEEDINGS (2000 – 2010)**

OYENIYI Janet Oluwakemi
National Centre for Agricultural Mechanization, (NCAM)
Idofian, Kwara State, Nigeria
olukemioyeni@yaho.com

SALMAN Abdulsalam Abiodun
Department of Library and Information Science
Faculty of Communication and Information Sciences
University of Ilorin, Nigeria
Salmanabiodun2009@yahoo.com

OLAIFA Taiye Paul
Librarian II, National Centre for Agricultural Mechanization
(NCAM), Kwara State, Nigeria
ejipaul@yahoo.com

ABSTRACT

This paper discusses bibliographic characteristics of research articles that appear in the Nigerian Institute of Agricultural Engineering (NIAE) proceedings between 2000 and 2010, covering a period of 10 years accumulated. It spelt out the number of research articles published in NIAE proceeding every year between the stated periods and also the specific areas covered in the field of agricultural engineering. It appraises the pattern of authorship, institutional spread of articles, academic and gender status of the authors. The methodology adopted was mainly documentary. Using the above parameters, a total number of 589 articles were published in the NIAE proceedings in the period under study where farm power and machinery have the highest research articles i.e. 25% of the total articles published in the proceedings. University have a total number of 795 authors representing 60.40% in the analysis of degree of institutional spread of authors followed by research institutes with 266 authors representing 20.2%. One thousand, two hundred and ninety one (1291) authors' academic status was not indicated. 10 Professors, 6 PhD holders, 2 Clergymen, 1 Director, 1 Research Officer, 1 Senior Lecturer, 1 Assistant General Manager, 1 Senior Special Assistant to President and 1 Assistant Director indicated their academic status. There are only 2 males and 3 females who specified their gender out of the entire 1315 authors. 421 research articles representing 71.45% of the total 589 articles are joint authorship works. It was recommended that the Federal Government of Nigeria should put in place effective research implementation committee that will ensure proper actualization of all the recommendations in NIAE proceedings in order to improve agricultural development. Other Agricultural Engineers aside University Engineers should be encouraged to carry out researches in the field of agricultural engineering and publish such findings in the NIAE proceeding. Also, authors are advised to specify their gender and academic status in subsequent publications. Collaborative effort is further encouraged in order to facilitate research robustness.

KEY WORDS: *Agricultural Engineering; Bibliographic Characteristics; Bibliometrics; Research Articles.*

INTRODUCTION

Agricultural engineering research articles are geared towards finding practical solutions to effective mechanized activities for the enhancement of sufficient agricultural products necessary for both domestic and international consumption. It is all about technological development, appraisal and sustainability of agricultural techniques necessary for mass production of agricultural products. NIAE proceeding is the publication of the Nigerian Institute of Agricultural Engineers, formerly known as Nigerian Society of Agricultural Engineers (NSAE) The first

publication of NIAE was in 1977. The proceedings are outcome of the conference every year. According to Mafeni, (1977) in his maiden address, (the then Federal Commissioner for Agriculture and Rural Development) it was because of the socio-economic circumstances of the country, which pave way for the need of mechanization as a pivotal role in the development of agriculture, hoped to help government to formulate sound agricultural mechanization policies. Since the year 1977, the proceeding does not siege for publication till date. Although the inaugural conference of the society took place in Benin City, Nigeria between 26th-27th May 1967, the conference according to the president, Prof. G.A. Makanjuola ended abruptly without concluding the business of the conference, because of the political developments in the country at that time. This then followed with a period of inactivity from then until August 1975 when the teething problem of the society was solved. This was a period of Operation Feed the Nation (OFN) in Nigeria, when the government was passionate about massive production of agricultural products. The idea behind the proceedings was to provide the necessary opportunities for a careful examination of the various aspects of the problems of mechanizing the nation's agricultural processes, which tries to look at the various problems confronting agriculture in the country and compare it with that in other nations and then suggest necessary solutions to the problems. The articles in these proceedings attempted to find practical solutions to different areas of study in agricultural engineering. It is however imperative that areas addressed by these articles are spelt out for easy classification and analysis. Pattern of authorship, academic and gender status of the authors are necessary parameters used to provide detail analysis of all the research articles. The 2008 edition of the proceedings is omitted in this research because the conference could not hold that year. Hence, no proceeding was published. This paper will therefore add to the existing research on NIAE studies and will attempt to describe divergent publications in the field of agricultural engineering for the period under study.

METHODOLOGY

The method adopted for this work is documentary analysis. All the proceedings from 2000 – 2010 were physically analyzed except 2008 with a view to collecting data that will help in achieving the objectives of the study. Coordination of data, analysis and discussion were carried out using simple statistical techniques such as percentages, charts and tables. This study confined its scope to the publications that appears in the NIAE proceedings between 2000 – 2010 by Nigerians and foreign authors in the field of agricultural engineering.

OBJECTIVES OF THE STUDY

1. Determine the number of research articles published every year between 2000 and 2010;
2. Determine the areas covered by the articles in agricultural engineering field;
3. Analyze the pattern of authorship alongside the collaborative strength;
4. Analyze the academic and gender status of the authors; and
5. Determine the institutional spread of the authors.

BIBLIOMETRICS

According to Wikipedia (2010), bibliometrics is a set of methods used to study or measure texts and information. It is worthy to note that, citation or content analysis could be used in bibliometrics methods. The United Kingdom government is considering using bibliometrics as a possible auxiliary tool in its Research Excellent Framework (REF), a process which will assess the quality of the research output of UK Universities and on the basis of the assessment results, allocate research funding. This is to buttress the importance of bibliometrics analysis of research in order to posit indebt analysis for decision making. Kostoft (2001), opine that bibliometrics has been increasingly applied to research in recent years. Harsany (1993), also stress that identifying the uses and impact of research is important for research performers, managers, evaluators and sponsors. He opine that it is important to know whether the audience reached is the audience desired in as much as it is also useful to understand the technical characteristics of other researches. Studying the contents of journals to analyze the various characteristics of the articles and authors has been done by many. According to Mattsson (2008), modern bibliometrics was largely inspired by Derek de Solla price and the seminar work was carried out by him in the

Bibliographic Studies in Agricultural Engineering (NIAE) Proceedings (1963), published in 1963, he analyzed research communication and presented a number of quantitative evaluation technique. He was the first to examine the increasing trend of collaborations among Chemistry researchers by using bibliometrics. He emphasized that since then bibliometrics has developed into a research field in its own right and given rise to a community of specialized expert.

In their work, Oyeniyi and Bozimo (2004), were of the opinion that the continuing growth in both knowledge and subject literature and its effective utilization has become matter of significant concern to society, especially to librarians and information scientists. That is why they have devoted their efforts to the study of the structure of communication patterns, writing patterns and habits of scholars in different subject field. These scholars and authors of the given discipline are usually the main contributors to knowledge in the field. The scholarly published papers of these people are vital in the proliferation of knowledge. Seraseric and Perck quoted by Pao (1982), observed that there are numerous ways by which a subject field can be analyzed. These include the history of the subject, the problems towards which it is oriented, the content of accumulated knowledge, the methodologies, the philosophy, the ethics and the people in the subject to name but a few.

PREVIOUS RELATED STUDIES

In Nigeria, Aiyepoku (1973), was the first to study a bibliometric document of geographical literature between 1901 and 1970. Since this first attempt, many authors have also tried to study different content of different journal articles; the results of which are applied as services for librarianship, scientific information and science policy. Awolola (2003), in his work on bibliometric analysis of the articles published in Nigerian Teacher Today 1991-2001 listed works done by Fadayomi (1996), who analyzed articles in Nigerian Journal of Weed Science. Others are Olorunsola and Akinboro (1996), who analyzed the articles in African Journal of Library and Information Science, and Moracsik (1985), submit that, publications are tangible outputs of research in the form of research reports, academic dissertations, theses, journal articles, conference papers, book chapters, monographs and books. Bibliographic characteristics of journal articles could be used as indicator of research productivity and to rank academic institutions' research output. It is in view of this that, this research sets out to analyse the articles in the NIEA proceedings covering a period of one decade. The following tables are used to analyse identified parameters for the study.

RESULTS

**TABLE 1: NUMBER OF ARTICLES
PUBLISHED PER YEAR**

S/No	Year	Total articles published
1	2000	44
2	2001	63
3	2002	38
4	2003	38
5	2004	84
6	2005	68
7	2006	72
8	2007	55
9	2009	60
10	2010	67
Total		589

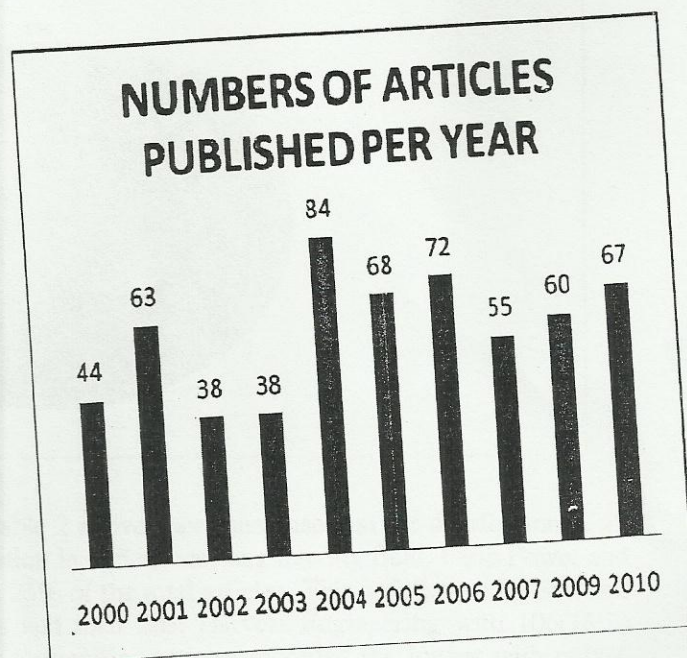
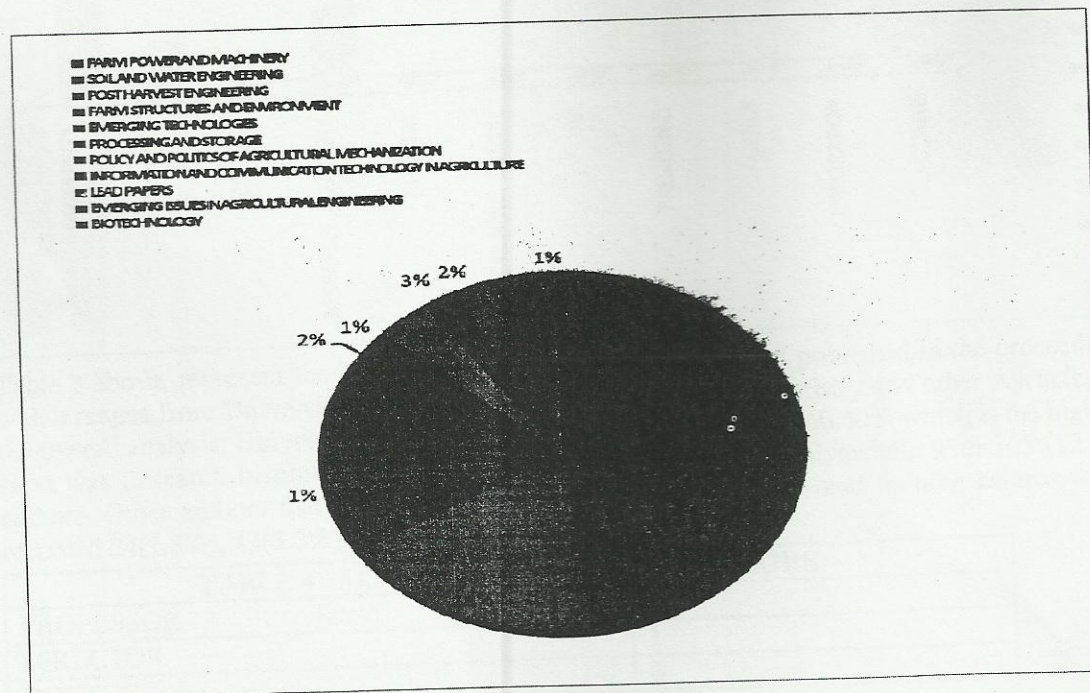


Table 1 shows the total number of articles published for the period under study. The table shows a total number of 589 articles published. The proceeding was skipped in the year 2008. Year 2004 has the highest publication of 84 articles followed by 72 articles in the year 2006. The lowest articles of the proceeding were recorded in the year 2002 and 2003 with only 38 articles each.

TABLE 2 AREAS OF SPECIALISATION		
S/N	Area	No of Articles
1	FARM POWER AND MACHINERY	150
2	SOIL AND WATER ENGINEERING	135
3	POST HARVEST ENGINEERING	106
4	FARM STRUCTURES AND ENVIRONMENT	31
5	EMERGING TECHNOLOGIES	6
6	PROCESSING AND STORAGE	67
7	POLICY AND POLITICS OF AGRICULTURAL MECHANIZATION	10
8	INFORMATION AND COMMUNICATION TECHNOLOGY IN AGRICULTURE	8
9	LEAD PAPERS	21
10	EMERGING ISSUES IN AGRICULTURAL ENGINEERING	15
11	BIOTECHNOLOGY	10
12	RENEWABLE ENERGY	24
13	OTHER PAPERS	6
	Total	589



Classification of the articles as shown in Table 2 above was done based on the distribution of all the articles into different areas of specialization in agricultural engineering field. Farm Power and Machinery has the highest articles which is 25% of the total articles. This is followed by Soil and Water Engineering with 135(23%) articles and then Post Harvest Engineering with 106(18%) articles. Emerging Technologies and other unspecified articles recorded the lowest with only 6 (1%) of the publications.

INSTITUTIONAL SPREAD OF THE AUTHORS													
TABLE 3													
YEAR	UNIVERSITY	POLYTECHNIC	COLLEGE	RESEARCH INSTITUTE	MINISTRY	TRAINING CENTRE	NA	PRESIDENCY	AGENCY	CORPORATION	OTHERS	TOTAL	
2000	50	17	2	24	2	0	0	0	0	0	0	95	
2001	82	14	2	11	6	2	0	0	0	0	1	118	
2002	32	4	2	33	1	0	0	0	1	0	0	73	
2003	54	14	4	4	0	0	0	0	0	0	0	76	
2004	91	20	6	61	2	0	0	0	0	0	1	181	
2005	79	20	1	41	3	3	0	0	0	0	0	147	
2006	114	28	7	26	3		6	0	0	0	2	186	
2007	97	21	5	18	2	0	0	1	1	1	0	146	
2009	105	20	11	9	1	0	0	0	0	0	0	146	
2010	91	7	3	39	4	0	1	0	0	0	2	147	
TOTAL	795	165	43	266	24	5	7	1	2	1	6	1315	
Percentage (%)	60.4	12.5	3.3	20.2	1.8	0.4	0.5	0.1	0.2	0.1	0.5		

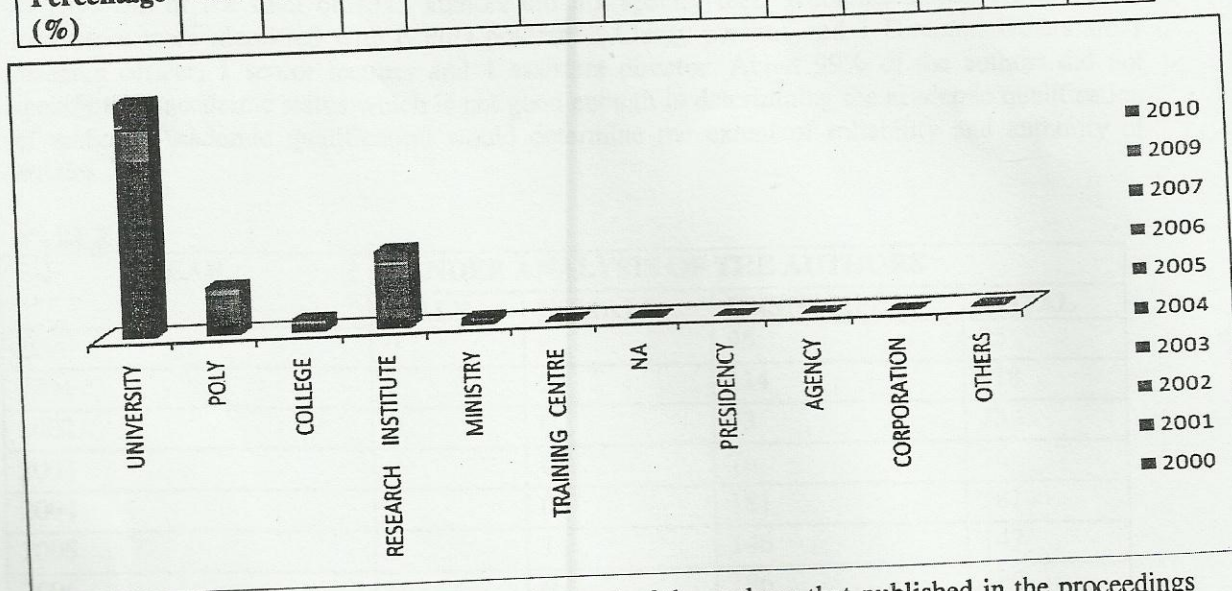
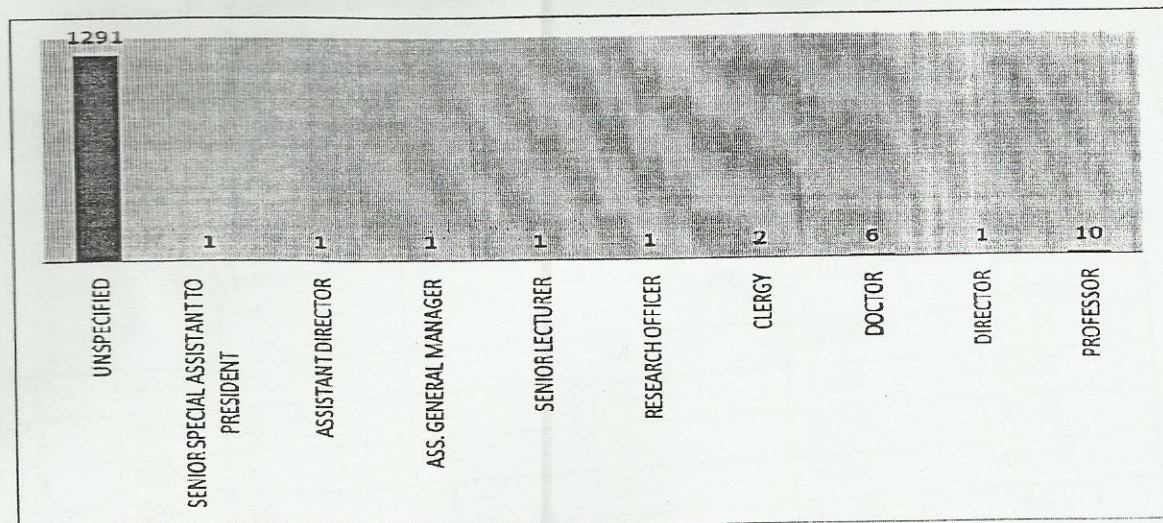


Table 3 above, represent the institutional spread of the authors that published in the proceedings which ranges from University to Polytechnic, Research Institute, Ministry and other Agencies. In the overall analysis, University has a total number of 795 authors i.e. 60.40% which is the highest. Next was Research Institutes with 266 authors (20.2%) and then Polytechnic with 165 (12.5%) authors. Other authors that featured came from ministries, colleges and training centres which recorded 24(1.8%), 43(3.3%) and 5(0.4%) respectively.

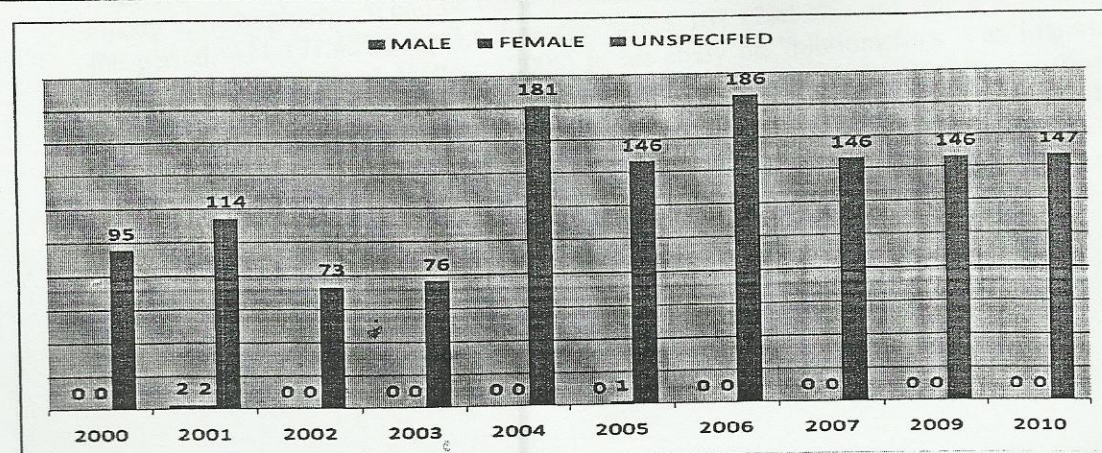
TABLE 4 ACADEMIC STATUS OF AUTHORS	
PROFESSOR	10
DIRECTOR	1
DOCTOR	6
CLERGY	2
RESEARCH OFFICER	1
SENIOR LECTURER	1
ASS. GENERAL MANAGER	1
ASSISTANT DIRECTOR	1
SENIOR SPECIAL ASSISTANT TO PRESIDENT	1
UNSPECIFIED	1291
TOTAL	1315



Analysis of the academic status of the authors that contributed in the proceedings constitute table 4. 1291 out of the total of 1315 authors did not specify their academic status. However, 10 Professors were identified with 6 PhD holders, 2 Clergy persons and 1 Director. Others are 1 research officer, 1 senior lecturer and 1 assistant director. About 99% of the authors did not specify their academic status which is not good enough in determining the academic qualification of authors. Academic qualification would determine the extent of reliability and authority of articles.

TABLE 5:

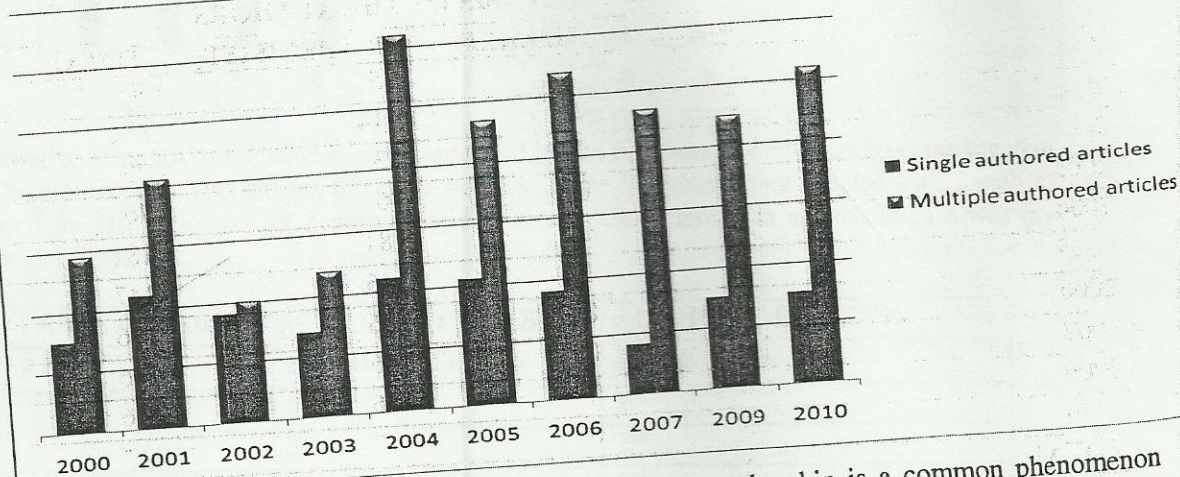
YEAR	GENDER ANALYSIS OF THE AUTHORS			
	MALE	FEMALE	UNSPECIFIED	TOTAL
2000	0	0	95	95
2001	2	2	114	118
2002	0	0	73	73
2003	0	0	76	76
2004	0	0	181	181
2005	0	1	146	147
2006	0	0	186	186
2007	0	0	146	146
2009	0	0	146	146
2010	0	0	147	147
TOTAL	2	3	1310	1315
PERCENTAGE %	0.2	0.2	99.5	



Out of 1315 authors that have contributed in the proceedings for the period under review, only 2 males, and 3 females identified their gender status.

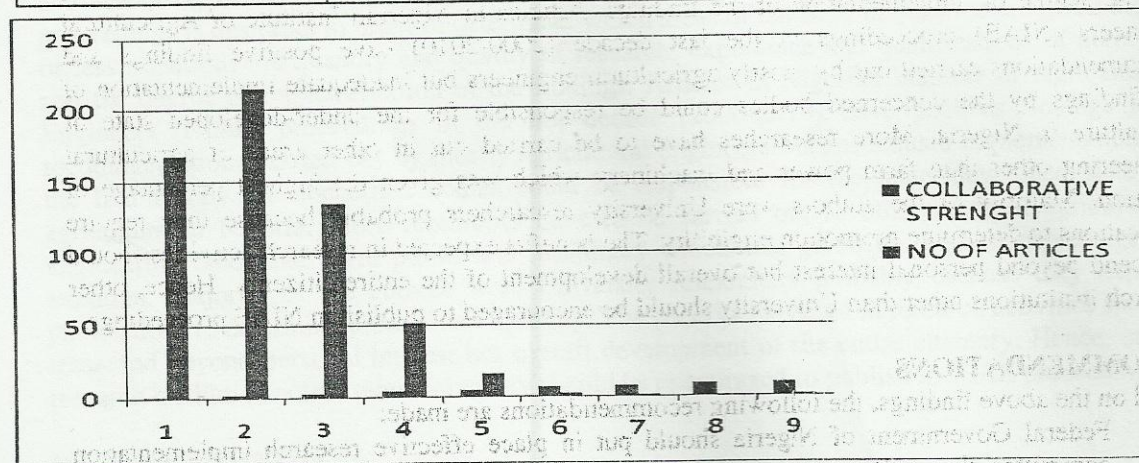
TABLE 6: PATTERN OF AUTHORSHIP

S/N	Year	Single authored articles	Multiple authored articles	Total articles published	% of Single Authored articles	% of Multiple authored articles
1	2000	15	29	44	34.09	65.91
2	2001	22	41	63	34.92	65.08
3	2002	18	20	38	47.37	52.63
4	2003	14	24	38	36.84	63.16
5	2004	22	62	84	26.19	73.81
6	2005	21	47	68	30.88	69.12
7	2006	18	54	72	25.00	75.00
8	2007	8	47	55	14.55	85.45
9	2009	15	45	60	25.00	75.00
10	2010	15	52	67	22.39	77.61
Total		168	421	589	28.52%	71.48%



Analysis of the pattern of authorship revealed that joint authorship is a common phenomenon among agric engineers. It can be deduced from the table that out of 589 published articles within the period, 421 (71.45%) are joint works, while 168 (28.52%) are single author works. This confirms the findings of Mattson (2008) in his study on "bibliometrics – an important tool in research evaluation". He noted that researchers in smaller and developing countries co-author work within one another. He also observed significant differences in collaboration pattern across field in which Engineering, Computing and Technology has the highest collaboration works. The study also revealed that co-authorship works in the U.S. received the highest citation rates and thus highest visibility. Statistically looking at the number of authors in comparative with the number of articles in table VII i.e. 1315/589. It could be seen that on the average each author has a total number of 2.3 articles.

TABLE 7: COLLABORATIVE STRENGTH OF AUTHORS		
COLLABORATIVE STRENGTH	NO OF ARTICLES	CUMMULATIVE FREQUENCY
1	168	168
2	215	430
3	135	405
4	51	204
5	16	80
6	2	12
7	1	7
8	0	0
9	1	9
TOTAL	589	1315



Collaborative strength of the authors was calculated by the numbers of authors who came together to produce an article. This ranges from 2-9 authors. Table VII shows that articles with 2 authors amounted to 215 followed by 3 authors with 135 articles. There was an article that was co-authored by 9 persons.

TABLE 8: FREQUENCY OF ARTICLES AND AUTHORS' RANKING		
NO OF ARTICLES	NO OF AUTHORS	RANK
14	2	1 st
13	1	2 nd
12	1	3 rd
11	2	4 th
10	2	5 th
9	9	6 th
8	4	7 th
7	9	8 th
6	14	9 th
5	11	10 th
4	30	11 th
3	46	12 th
2	121	13 th
1	405	14 th

Rank list of authors as informed by frequency of articles shows that 2 authors ranked first with 14 published articles credited to each of them. They are followed by authors with 13 articles and another author with 12 articles. There are 2 authors each, which produced 11 and 10 articles each. 121 and 405 authors published 2 and 1 articles respectively, ranking them second to the last and last on the list.

CONCLUSION

NIAE proceeding is without doubt an important developmental tool in research activities. Apart from aiding the research ability of agricultural engineers, it also helps a developing country like Nigeria in various ways. Since the importance of research can never be underrated in any developing or developed country, the government and individuals need to intensify their efforts in research, which will in turn help the country in her bid to develop. Research analysis of gender and academic status, bibliographic characteristics, nature and pattern of articles in conference proceedings is desirable in order to determine: which areas of the field in question are given more or less attention; the quantity and quality of research; experience and qualifications of authors; and the degree of implementation of the findings. Articles in Nigerian Institute of Agricultural Engineers (NIAE) proceedings in the last decade (2000-2010) have positive findings and recommendations carried out by mostly agricultural engineers but inadequate implementation of the findings by the concerned bodies could be responsible for the under-developed state of agriculture in Nigeria. More researches have to be carried out in other areas of agricultural engineering other than farm power and machinery which was given the highest percentage of attention. Majority of the authors were University researchers probably because they require publications to determine promotion eligibility. The benefits expected in research activities should transcend beyond personal interest but overall development of the entire citizenry. Hence, other research institutions other than University should be encouraged to publish in NIAE proceedings.

RECOMMENDATIONS

Based on the above findings, the following recommendations are made:

1. Federal Government of Nigeria should put in place effective research implementation committee that will ensure proper actualization of all the recommendations in NIAE proceedings. This will improve agricultural development.
2. Other Agricultural Engineers aside University Engineers should be encouraged to carry out researches in the field of agricultural engineering and publish such findings in the NIAE proceeding. This is evidential in table 3, where 795 articles were published by only Engineers from the Universities.
3. Authors are advised to specify their gender and academic status in subsequent publications for better analysis.
4. More articles are encouraged for publication in the proceeding as the articles recorded low turn-out in 2002 and 2003. The experience in 2004 when the highest turn-out of publications was recorded should be adopted.
5. Collaborative effort by two and more authors is further encouraged in order to facilitate research robustness. This is because; such article will be a combination of many ideas from specialized individuals.

REFERENCES

- Aiyepeku, W. O. (1973)- Bibliometrics and Documentation Characteristics of Geographical Literature in Nigeria 1920 – 1970. *Unpublished Ph.D Thesis*, University of Ibadan
- Awolola, J. O. (2003)- Bibliographic Analysis of Articles Published in Nigeria. *Teacher Today*. 37 (1), 23 – 30.
- Fadayomi, J. A. (1996)- A Bibliographic Analysis of Articles Published in the Nigerian Journal of Weed Science 1988 – 1995. *Nigerian Journal of Weed Science*. 51 – 63
- Harsany, M. A. (1993)- Multiple Authors, Multiple Problems – bibliometrics and the Study of Scholarly Collaboration. *Library and Information Science Research*. 15 (4), 325 – 354

- Kostoff , R. et al (2001)- Citation Mining : Integrating Text Mining and Bibliometrics for Research User Profiting. *Journal of the American Society of Information Science and Technology*. 52 (13), 1148 – 1156
- Mafeni, B.O.W. (1977)- “Special Address” *Proceeding of Nigerian Society of Agricultural Engineers* (1), 1 – 9
- Mattson, P. et al (2008)- Intra – EU vs Eu Scientific Co-Publication Pattern in Eu Scientometrics, 75 (3), 555 – 574.
- Moracsik, M. J. (1985)- Applied Scientometrics: An Assessment Methodology for Developing Countries. *Scientometrics*.7 (3), 165 – 179.
- Oyeniya, J. O. and Bozimo, D. O. (2004)- The Relationship Between Author Collaboration and Productivity: A Study of Sorghum Literature in Nigeria. *African Journal of Library Achieves and Information Science*. 14(1), 29 – 36
- Olorunshola, R. and Akinboro, E. O. (1996)- Bibliographical Analysis of Articles: A Study of African Journal of Library, Achieve and Information Science 1989 – 1997. *African Journal of Library and Information Science*. 8(2), 15 – 22.
- Pao, M. L. (1982)- Collaboration in Computational Musicology. *Journal of American Society of Information Science*. 33(I), 35 – 43.
- Wikipedia, (2010) Bibliometrics- Wikipedia, the free encyclopedia.htm. <http://www.bibliometrics> Accessed 9 July, 2011.